SCOET **Standing Committee on Educational Technology**

❖ A joint initiative of the Council of Chief Executive Officers of the Advanced Education Council of British Columbia and the Ministry of Advanced Education, Training and Technology ❖

Issues Affecting the Implementation & Use of Educational Technology

❖ B.C. Colleges & Institutes

*The Standing Committee on Educational Technology (**SCOET**) is aware of the current economic realities facing the colleges and institutes. Our system simply does not have the funding to do all the things that need to be done.*

*However, some of the issues we have identified can be addressed by individual institutions even with our present limited resources. We should move quickly to find these immediately attainable solutions. The more costly issues and the system-wide issues need careful planning that builds a substantial consensus. With all these variables in mind, **SCOET** will begin the process of policy development on issues affecting educational technology.*

Standing Committee on Educational Technology
❖ Research Report No. 3

❖ ❖ ❖

Issues Affecting the Implementation and Use of Educational Technology

B.C. Colleges & Institutes

April 1992

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93-01191/

Canadian Cataloguing in Publication Data
Hammond-Kaarremaa, Liz.
The issues affecting the implementation
and use of educational technology

(Research Report / Standing Comittee on
Educational Technology, ISSN 1188-2352 ; no. 3)

Includes bibliographical references: p.
ISBN 0-7726-1520-9

1. Educational technology - British Columbia.
I. Harby, Amanda. II. Standing Committee on
Educational Technology (B.C.) III. Title. IV. Series:
Research report (Standing Committee on Educational
Technology (B.C.)) ; no. 3.

LB1028.3.H35 1992 378.1'7078 C92092119-1

❖ April 1992

The Standing Committee on Educational Technology is funded by the Ministry of Advanced Education, Training and Technology.

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TABLE OF CONTENTS

Preface 1

Acknowledgments 2

Committee Membership 2

Executive Summary 3

Introduction 9
  - The Surveys: 10
  - The Interviews: 11

Section One - The Issues 13

1. Critical Needs 13
  - 1.1. Time 13
    - 1.1.1. Not Enough Time to Learn 13
    - 1.1.2. Time to Adapt the Curriculum 14
    - 1.1.3. Time to Evaluate Software Applications 15
  - 1.2. Professional Development Activities 15
    - 1.2.1. Not Enough Workshops on Educational Software 15
    - 1.2.2. Lack of Information on Subject Specific Software 16
    - 1.2.3. Technological Illiteracy 17
    - 1.2.4. Training and Support 17
    - 1.2.5. Barriers to Existing Professional Development Activities 17
    - 1.2.6. Faculty Renewal and Professional Development 18
    - 1.2.7. Not Enough Professional Development Activities for Administrators & Staff 18
    - 1.2.8. Keeping Up with Technological Advances 18
    - 1.2.9. Learning the Effective Use of Educational Technology 19
  - 1.3. Funding 19

2. Support 21
  - 2.1. Equipment 21
    - 2.1.1. Replacement of Old Equipment 21
    - 2.1.2. New Equipment 21
    - 2.1.3. Not Enough Computers 22
    - 2.1.4. More Access to Computers 23
    - 2.1.5. More Access to Other Equipment 23
    - 2.1.6. Student Access to Labs 23
    - 2.1.7. Hardware Compatibility 24
    - 2.1.8. Funding of Equipment 24
  - 2.2. Technical & Instructional Support 24
    - 2.2.1. Technical Support 24
    - 2.2.2. Instructional Support 25
  - 2.3. Software 26
    - 2.3.1. Out of Date Material 26
    - 2.3.2. Information on Subject Specific Software 26
    - 2.3.3. Time to Learn & Evaluate Software 26
    - 2.3.4. Funding of Software & Upgrades 26
    - 2.3.5. Software Purchases 27
    - 2.3.6. Copyright & Site Licensing 27

2.4. Administrative Support 28
    2.4.1. Support & Encouragement 28
    2.4.2. Strategy & Planning 28
    2.4.3. Consultation with Staff 28
    2.4.4. Plan to Integrate 28
    2.4.5. Special Projects 29
2.5. Telecommunications 29
    2.5.1. Access & Training 29
2.6. Library Resources 30
    2.6.1. Role of Libraries 30
2.7. Ergonomics 30
    2.7.1. Working Conditions 30

3. Effectiveness 31
2.   3.1. Pedagogical 31
    3.1.1. Educational Value 31
3.2. Curriculum 32
    3.2.1. Curriculum Adaptation 32
    3.2.2. Technological Literacy for Students 32

4. Expectations 33
4.1. Students' Future Needs 33
    4.1.1. Exposure to Technology 33
4.2. Faculty Expertise 34
    4.2.1. The Instructor's Changing Role 34
    4.2.2. Integration & Motivation 34
    4.2.3. Technological Literacy 35
    4.2.4. Outside Developments 36
    4.2.5. Students Know More Than Faculty 36
    4.2.6. Emerging Technological Developments 36
    4.2.7. Attitudes & Educational Technology 36
4.3. External Demands 37
    4.3.1. External Demands 37

Section Two - Possible Solutions 39

Select Bibliography 47

Appendix A - Terms of Reference 51

Appendix B - Faculty Survey/Results 55

Appendix C - Administrators' Survey/Results 75

Appendix D - Staff Survey/Results 89

Appendix E - Student Survey/Results 103

Appendix F - Issues at the Open Learning Agency 115

Appendix G - The Interviews 119

Appendix H - The 1991 Educational Inventory 123

Appendix I - Glossary of Terms 127

The Standing Committee on Educational Technology

Purpose

The Standing Committee on Educational Technology (**SCOET**) is a college and institute system-wide committee with a mandate to monitor and assess changes in educational technology, and to propose policy directions for the system as a whole.

Objectives

SCOET's intention is to foster an internationally competitive education system for British Columbians in light of the rapidly expanding role of educational technology within education systems worldwide.

The committee is collecting information about all relevant aspects of educational technology both from sources within our system and from national and international sources. This information is being used to develop strategic direction recommendations to the Council of Chief Executive Officers (**CCEO**) of the Advanced Education Council of British Columbia.

Reports

This document is one in a series of reports that the committee will be completing and distributing within the college and institute system. It is the product of one of the surveys that the committee is undertaking in order to assess the current status of a specific area of educational technology in our system.

The surveying process, while time consuming and work intensive, is considered the most effective way for the committee to acquire accurate and reliable information from which to base its recommendations. The committee owes great thanks to everyone assisting with the ongoing collection of this information.

SCOET Reports to date are:

The 1991 Educational Technology Inventory : An Assessment of the Current Status at B.C. Colleges & Institutes.

Electronic Communication Systems : An Assessment of the Current Status at B.C. Colleges & Institutes.

ACKNOWLEDGMENTS

SCOET was established in June 1990 under the direction of the Council of Chief Executive Officers (**CCEO**), and is funded by the Ministry of Advanced Education, Training and Technology (**MAETT**).

The Chairman acknowledges and extends his appreciation to the members of the committee for their contributions to this report, with a special acknowledgement to Liz Hammond-Kaarremaa for coordinating the project.

The Committee would like to thank the 396 college and institute personnel who completed the surveys and the following people for their valuable time, input and assistance: Ron Sterne (BCIT), Jeanette Murray (Cariboo), Peggy Steves (CNC), John Blackwell (Douglas), Dorothy Smith (EKCC), Sylvia Iredale (ECCAD), Sabrina Tong (Justice Institute), Diane Bloom & Nobu Chow (Kwantlen), Lynne Powell (Northern Lights), Barb Sheridan (NWCC), Val Whitten (Okanagan), Cynthia Booth (PMTI), Marg Poohachoff (Selkirk), Koraena Jang (VCC), Marnie Mitchell (Task Force on Employment & Training), Tony Bates (OLA), Wolfgang Strigel (Strategic Planning for Applied Research and Knowledge), Betty Mitchell (OLA), Milt McLarin (SFU), Ken Stratford (Business Council of Victoria), Cheryl Dahl (Fraser Valley College), Gary Weger (Applied Science Technologies and Technicians of B.C.), Dan Smith (Motion Works, Inc.). A special thanks to Andrew Speed (Malaspina) for his Paradox assistance.

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EXECUTIVE SUMMARY

This report is a compilation of the issues perceived and identified by college and institute personnel and students that affect the implementation and use of educational technology. The report will assist the Standing Committee on Educational Technology (SCOET) with developing policy and strategic direction recommendations for the college and institute system.

The goal of the project was to identify existing, latent and potential issues throughout the college and institute system. This was achieved by surveying faculty, students, staff and administrators for their perceptions of the issues. Interviews were also conducted with select individuals who offered further insight on the technological issues facing the system and the world at large.

Critical Forces

Two critical forces came to the forefront that require careful consideration. The first deals with the nature of technology and particularly educational technology. Technology is advancing and will continue to impact upon educational systems.

> The impact of technology is and will be a major revolutionizing force in the history of education. One has only to consider how the printing press affected reading and writing to understand how technology drives intellectual developments.[1]

Perceptions of the future, whether indicated in this report or from the research literature, all agree upon this fundamental force.[2] Accepting this premise begs the questions of how, why and with what resources will the college and institute system keep pace.

The second critical force is more specific. From the survey results...

> Students believe they will be adequately prepared with the technological skills at graduation to meet the future. Faculty, administrators and others interviewed, however, indicated that students may not have the necessary skills.[3]

Maintaining a reasonable pace with technological advances and adequately preparing students to meet the technological future are fundamental issues that the system will have to address. Students must be adequately prepared to meet the future or the system fails to fulfill its educational mandate. Strategies have to be developed to incorporate new or emerging technologies into the system, or the system will fall further and further behind industry and business. Instructors have to be able to meet the challenges that educational technologies present so that they can prepare students for the future. These broad issues will have to be addressed before they become detrimental to the future of our educational system.

---

[1] Raymond S. Nickerson and Philip P. Zodhiates, *Technology in Education : Looking Toward 2020* (Hillsdale, N.J., 1988).

[2] *Ibid.*, p 119.

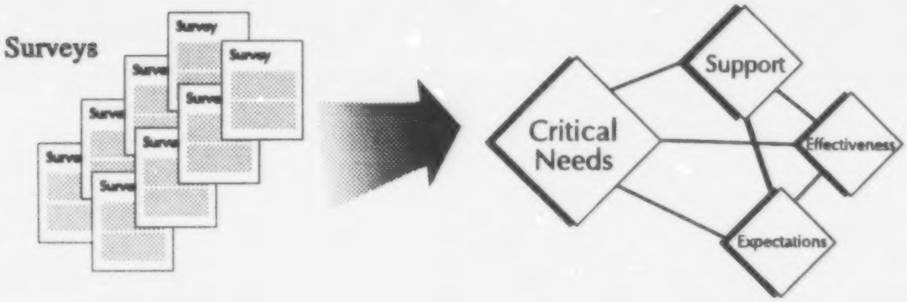
[3] See Section One - 4.1.1. Exposure to Technology.

Areas of Concern

The issues identified in this study have been placed into four categories to provide a comprehensible framework. Note that most issues overlap more than one area and cannot be considered to exist independently. The ranking below reflects the significance of the issues as perceived by the survey respondents.

Perceived Issues

Survey results brought Critical Needs into sharp focus, with less of an emphasis on Support, Effectiveness and Expectations. The areas of concern are interrelated but the system lacks a balanced approach which addresses the issues collectively.



1. Critical Needs:

Time, professional development and funding have been identified as the most critical issues. Time has to be invested to learn about educational technology, to evaluate it and to successfully integrate it into the classroom. Relevant professional development is required to help faculty and other college personnel learn effective uses of new and emerging educational technologies. Funding is central to many of the issues identified. Without it, and the commitment that stands behind it, strategies cannot be implemented that address the issues.

2. Support:

The second category groups the issues involving support resources and facilities. It summarizes concerns regarding equipment, technical and instructional support, software requirements, administrative support, telecommunications requirements, the role of libraries and the question of ergonomics. Without a solid support system, which can adapt efficiently and effectively to on-going technological change, the other areas of concern cannot be fully addressed.

3. Effectiveness:

The third area of concern was expressed in terms of pedagogical value and changes to the curriculum. The use of educational technology will have to be carefully evaluated to determine its value to the learning process. The expected increase in use of educational technology in instruction will mean that curricula will have to be adapted. Students will have to be able to function with technology at a basic level but they must also acquire a theoretical and conceptual understanding that will enable them to adapt to new technological applications and practices. The use of educational technology must be effective and valuable to both the instructional and learning processes.

4. Expectations:

The issues in the last category concern what the future will demand from the college and institute system. Is the system adequately preparing students for a technologically dependent future? How is the role of the instructor changing and how will this change impact upon the system? How can faculty keep up with technological change? Finally, there is concern about external demands and pressures upon the college and institute system with regard to technology in the broadest sense. What kind of graduate does industry and business want? Will there be a need for on-going workplace training in technology? How and should the education system be a driving force in terms of technological advancements?

Possible Solutions

Throughout the report SCOET has identified *possible* solutions to assist with the resolution of these issues. The approach taken was to develop practical and cost effective solutions that can be considered and acted upon by the different constituencies within the system. The solutions are meant to initiate dialogue, to reinforce existing commitments and to offer a framework to aid with planning.

Strategic Responses

Three strategic responses emerged repeatedly during the exercise of compiling the solutions. These offer an initial juncture from which the system can begin to consider and address all of the issues affecting the implementation and use of educational technology, especially those in the first area of concern, Critical Needs.

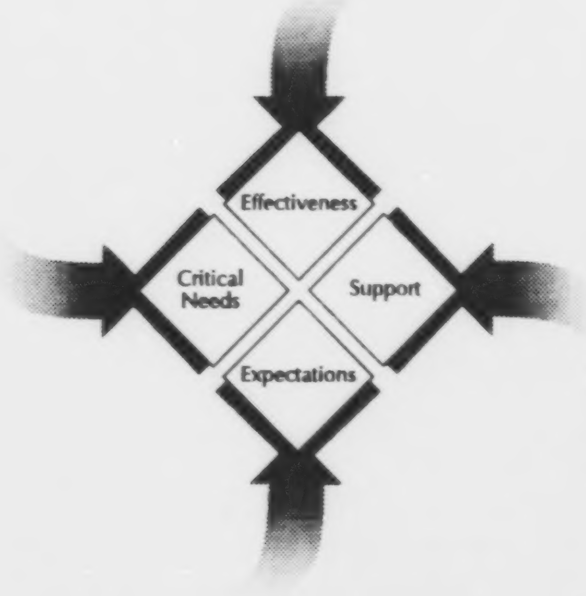
A. Professional Development:	Research needs to be conducted in the area of professional development in order to assess specific training needs, barriers to training and methods of delivery in terms of educational technology.
B. Communication:	There is a need for better system-wide communication on educational technology, its use and development. The most effective method of disseminating information to the system needs to be fully investigated.

C. Instructional Support: Faculty need more effective and efficient methods to learn about educational technologies. Developing instructional and technical support systems will provide faculty with the assistance they require to use and implement educational technology in their instruction.

Together, these strategic responses offer a method to minimize the time and effort spent learning about educational technology and its implementation given limited resources. Once developed, these and similar strategies will address many of the other issues identified in an attempt to bring about a balanced approach in determining the implementation and use of educational technology.

A Balanced Approach

While some issues are perceived as more critical than others, the system needs to work toward an integrated solution which balances each area of concern.



The Next Phase SCOET is responding to these strategies by working with the system to facilitate better communications, to improve instructional support and to determine professional development needs and methods of delivery with respect to educational technology.

It is important that the colleges and institutes consider these issues and the role they can play in resolving them. It is hoped the report will act as a catalyst for dialogue, problem-solving and planning for the colleges and institutes. As a tool for dialogue, SCOET invites feedback from individuals and groups within the system on ways to resolve the issues. This type of feedback will aid the committee in fulfilling its mandate.

Further analysis of this report will be completed to determine other underlying themes and critical forces impacting upon the system. The outcome of this and other SCOET research projects forms the research foundation from which SCOET will formulate policy and strategic direction recommendations for the Council of Chief Executive Officers.

INTRODUCTION

The Issues Affecting the Implementation and Use of Educational Technology Project (referred to in this report as the Issues Project) group drafted the project's terms of reference (see Appendix A) to identify and expose issues in a number of categories and at a number of different levels. The terms of reference include identifying existing needs, latent needs, specific needs to types of users, issues relating to managing and using the technology, issues that relate to colleges and institutes as well as to the system. The project research also endeavoured to identify issues that will impact the system in the future.

The research was conducted at two levels. Surveys were distributed within the college and institute system to faculty, staff, administrators and students to identify issues on behalf of those particular groups. Interviews were also conducted with a number of individuals, who were identified by SCOET as representing a particular expertise in the field, a breadth of vision in terms of technology and its role in the future of post-secondary education, or because of their affiliation with organizations external to the system that are associated with technology.

The data was analyzed and categorized into "Section One - The Issues." The issues are organized into four broad areas: Critical Needs, Support, Effectiveness and Expectations. Under each broad heading are a number of key issues with a short description. All issues include possible solutions or strategies for resolution. The solutions were compiled from discussions with SCOET members, ideas put forward by those surveyed, strategies extrapolated from similar reports, studies and planning guides (see Select Bibliography) as well as recommendations put forward from the first SCOET research report , *The 1991 Educational Technology Inventory : An Assessment of the Current Status at B.C. Colleges & Institutes.*[4] The solutions are not meant to be understood as the definitive plan to implement and use educational technology but as a checklist of possibilities.

Section Two is comprised of charts which outline the issues and include an abridged checklist of the possible solutions for the respective constituencies The constituencies are:

- ❖ a College or Institute;
- ❖ a Collaborative Effort between Institutions;
- ❖ the System (MAETT and/or SCOET).

Issues and corresponding solutions will and do overlap constituencies.

While many colleges and institutes may have many of these strategies or solutions in place, it is hoped the solutions will reinforce their existing commitments and provide an opening for discussion of new possibilities. This report is a therefore a start -- a first attempt at grappling with the multifaceted problem of the implementation and use of educational technology. The issues and the possible solutions identified, along with the data from other SCOET research projects, will provide a base from which SCOET can fulfill its mandate.

---

[4] Wayne Welsh, *The 1991 Educational Technology Inventory : An Assessment of the Current Status at B.C. Colleges and Institutes* (Victoria, 1991). See Appendix H for the recommendations.

THE SURVEYS:

Examples of the four surveys distributed to faculty, staff, administrators and students are represented in Appendices B-E. The surveys were distributed to the colleges and institutes in early May 1991. Over the summer and early fall, the surveys were returned and the information was entered into a database. The responses were analyzed and are included by surveyed group in the Appendices B-E.

The surveys, for the most part, were sent to the Vice Presidents' Administrative Assistants with instructions to distribute the surveys equally among infrequent users, moderate users and frequent users of educational technology. This was to ensure that a balanced representation was established. The definition and terms of the type of user and educational technology were provided to both the initial contact person and the survey recipient.

> "Educational Technology (loosely defined) is, communications, media, computer or other electronic technology as the subject of educational programs, or, as applied in the development, delivery and administration of educational programs, or, as used by students to facilitate or enhance their education."

The types of users of technology in an educational setting were defined as the following:

> "An infrequent user is defined as using technology less than 1 hour per week, a moderate user between 1 and 4 hours per week and a frequent user more than 4 hours per week."

A total of 570 surveys were distributed to the system and 396 (69%) surveys were completed and returned. The Open Learning Agency declined to participate, preferring to respond by way of a written report that is summarized in terms of the critical issues in Appendix F. The report was analyzed and the issues were incorporated into Section One.

The contacts at the institutions worked equally hard at determining the correct distribution (i.e., not to send all the surveys to frequent users only, such as enclaves of computing science students) and the collection of the surveys. There were two problems encountered by the distribution contacts. Most contacts indicated that they found it difficult to determine who was an infrequent user of educational technology. The second problem encountered was the slowness of the return of the surveys. It should be noted that the surveys were distributed at the end of the normal semester period and many college personnel were engaged in "wrap-up" activities, while some students were not in classes. Three sets of students' surveys were re-distributed in the early Fall. Given these difficulties, however, an overall average of 69% return rate is considered a good representation.

The surveys were designed to collect information on what issues impact the user of educational technology now and what issues would impact the system in the future. To solicit this type of information many of the questions were designed to be open-ended and required a subjective response. The responses to the long-answer questions were carefully read, responses were grouped by category and then tabulated.

The results of each survey group were then carefully analyzed to extract the main or key issues concerning the implementation and use of educational technology. These key issues are then grouped together under broad categories in Section One.

THE INTERVIEWS:

Interviews with individuals were also conducted to determine what issues existed now and what issues would impact the system in the future in terms of educational technology. The individuals interviewed were identified by SCOET as having particular expertise in the field, a breadth of vision in terms of technology and its role in the future of post-secondary education, or because of their affiliation with organizations external to the system but which are associated with technology. The Issues Project Group wanted to interview many more individuals but time limited this process.

The interviews were conducted using open-ended questions. This type of interview was conducive to soliciting responses about specific issues related to educational technology as well as soliciting general comments on how technology will affect society as a whole.

Notes from the interviews were taken and analyzed in terms of issues. The issues identified are incorporated into Section One of this report.

SECTION ONE - THE ISSUES

The issues identified in the four surveys and the interviews are listed below. The issues are in roughly descending order of significance as identified in the surveys, but it should be noted that most issues are so closely linked to one another that they cannot be easily divorced from the other. (e.g. Time was identified as a critical issue to faculty and it relates to many of the other issues). Indeed, many issues overlap in specific areas of concern. The long-answer questions were designed to solicit qualitative rather than quantitative responses.

The issues are organized in four main categories: Critical Needs, Support, Effectiveness and Expectations. Under each are sub-categories that include both a basic description of the issue as well as which who identified it as an issue. For example, *(F1b)* refers to the Faculty survey (F)- Question 1b (see Appendix B); *(Interviews:Strigel)* refers to an interview with Wolfgang Strigel; *OLA* refers to issues at the Open Learning Agency (see Appendix F), et cetera. Many of the sub-issues have been identified by several or even all of the surveyed groups and individuals interviewed.

Following the description of the issues are corresponding **possible solutions**. These solutions do not constitute a definite set of recommendations but offer possibilities from which the system, colleges and institutes can plan for the implementation and use of educational technology. These solutions are by no means the end result. Many colleges and institutes already have many of these strategies in place. The solutions should be regarded as a first attempt at offering practical solutions to the complex and multifaceted problem of implementing and using educational technology.

The charts in Section 2 represent a quick reference guide or checklist to the issues and the solutions.

1. CRITICAL NEEDS

1.1. TIME

1.1.1. Not Enough Time to Learn

Faculty, staff and administrators indicated that there is not enough time to learn about the new technologies and apply them to their respective areas. This was identified as a critical issue from all three surveyed groups. This issue incorporates a number of different factors. The most serious one is that the new technologies emerge in a "high-tech" manner surrounded by technological jargon in which an instructor has to invest valuable time deciphering in order to understand the technology and its possible applications. As time goes on, the technology becomes more comprehensible. However, interested faculty either have not kept up with the technology or have spent a considerable amount of valuable time trying to learn the technology. For example, a few years ago, laser and CD-ROM disks were new technologies that were difficult to understand, evaluate and integrate into the classroom. Now they are better understood and the time factor in learning is less. Because of this "time lag" in learning the emerging technologies, the colleges are at least a year behind in incorporating them into the classroom.
(F1b,F3a,F6,F11,F12a;A1b,A3a,A6,A11,A12a;Staff1b,Staff3a,Staff8,Staff13,Staff14a; Interviews:Dahl)

College personnel clearly indicated that they are willing to learn appropriate applications for their instructional, administrative or support staff positions. It is the learning process that needs to be shortened and simplified. This could be done using all or some of the techniques below:
(F13,A13,Staff15)

◆ Suggestions for a College or Institute:

- hire or designate one person to keep up to date with emerging technologies; someone who can filter and condense the information into a form that assists the instructor and other college personnel.
- retain a group of people (or committee) who have the responsibility of providing information to the faculty at large on advances and changes. This would make it possible to keep up, make keeping up more efficient and provide professional development for faculty.
- form user groups for different technologies whose main function is to exchange and distribute information to faculty.
- encourage faculty to develop closer ties to business and industry in order to keep up to date with technology.
- encourage industry and business leaders to visit colleges to demonstrate and discuss new technologies.

◆ Suggestions for a Collaborative Effort:

- provincially and collectively, colleges can share information through a newsletter, an electronic bulletin board or electronic mail.
- colleges as a group can hold workshops on a regular basis to help share and disseminate information.

◆ Suggestions for the System (MAETT/SCOET):

- sponsor workshops on a regular basis to help share and disseminate information.
- sponsor a newsletter for college faculty that will highlight new educational software and reviews, and/or sponsor a bulletin board where this information will be accessible to all college faculty.

1.1.2. Time to Adapt the Curriculum

Faculty do not have enough time to adapt the curriculum. Curricula have to be adapted to include technological applications either because of external pressures (i.e., industry standards, accreditation, competition) or because instructors know the technological application will enhance the instruction (individual interactive learning, concept reinforcement, analytical skills, etc.). It is possible to anticipate some of the external pressures a few years before the technological change becomes imperative.
(F1b,F1c,F2,F9; Interviews: Dahl,B.Mitchell)

◆ Suggestions for a College or Institute:

- program advisory groups (ministerially or institutionally based) should play a more proactive role in monitoring indicators of change.
- evaluate the length of release time given to faculty whose courses have to change to accommodate technology. Given the regular term schedule, faculty usually only have time in May or June for curriculum development. Greater planning time should be made

available to them earlier, perhaps up to two years before the planned change.

❖ Suggestion for the System (MAETT/SCOET):
- provide leadership in cooperation with the different program/curriculum areas by sponsoring annual workshops on how technology is being used by instructors in the curriculum.

1.1.3. Time to Evaluate Software Applications

Faculty stressed that they need more time to evaluate software applications that would enhance instruction. (*F1b,F1c,F2,F11,F13*)

❖ Suggestion for a College or Institute:
- provide release time to one member of a department so that he/she can research available software appropriate for that program area. That person can then demonstrate the selected software to other members.

❖ Suggestion for a Collaborative Effort:
- articulation committees could share software application evaluations.

❖ Suggestions for the System (MAETT/SCOET):
- provincial workshops should be held in different program areas to demonstrate software and share evaluations.
- review the Ministry of Education's (K-12) software evaluation process and consider making recommendations to the Colleges and Institutes.

1.2. PROFESSIONAL DEVELOPMENT ACTIVITIES

1.2.1. Not Enough Workshops on Educational Software

The issue of not enough professional development workshops on educational software is a major concern for faculty. They realize that technology is advancing rapidly in training and they feel a strong need to be able to keep up to date with it. Many fear that the longer they put off learning about educational technology the further behind they will be and the harder it will be to catch up. (*F1b*)

❖ Suggestion for the System (MAETT/SCOET:
- research the issue in more detail and report back to the CCEO with recommendations on professional development needs.

This issue involves two specific areas of concern. The first area deals with generic software that can be used in many different departments (i.e., word processing, spreadsheets, graphic presentation programs, etc.), while the other area deals with educational software specific to an instructional area (i.e., simulation programs for ecology).

Generic software involves common computer skills from basic keyboarding to advanced program features such as formatting or importing/exporting between programs. These skills tend to be transferable between many generic programs. Professional development workshops should plan courses that cover these types of skills.

❖ Suggestions for a College or Institute:

- offer more professional development opportunities for faculty in computer related areas.
- draft a professional development plan that will incorporate many different activities (e.g., courses, demonstrations, software/computer interest groups, video tapes covering specific software programs, etc.)
- incorporate a training program covering the basics in generic software.

❖ Suggestion for a Collaborative Effort:

- open in-house training sessions to personnel from other colleges.

❖ Suggestions for the System (MAETT/SCOET):

- establish a permanent professional development fund to reinforce and expand professional development activities with an emphasis on educational technology
- analyze common generic computer skills and develop a series of computer courses specifically designed for college faculty to learn these skills.
- investigate methods of delivering professional development workshops with OLA via Knowledge Network.

1.2.2. Lack of Information on Subject Specific Software

The second area of concern deals with the absence of information on educational software for a specific course or program area. This stems from a lack of time to research educational software, and a lack of communication between colleges to share information on subject specific software. *(F1b,F1c;Interviews: Bates,Dahl)*

❖ Suggestions for the System (MAETT/SCOET):

- sponsor an annual conference for college faculty organized into subject specific streams where faculty can demonstrate and share information on educational software specific to subject areas.
- sponsor a newsletter for college faculty that will highlight new educational software and reviews, and/or sponsor a bulletin board where this information will be accessible to all college faculty.
- identify and recommend suitable professional development activities for college faculty and recommend methods to offer professional development.
- investigate ways to encourage communication (electronic mail, electronic conferencing, bulletin boards) about subject specific software.

1.2.3. Technological Illiteracy

The major issue faculty identified that would affect them over the next five years was the need for training and upgrading to make them technologically literate. (*F9;Interviews: Bates, McLarin,B. Mitchell)*

The results of the survey indicate that many faculty know that they need professional development activities related to educational technology, however they are not sure exactly how or what professional development activities would assist them.

- Suggestion for the System (MAETT/SCOET):
    - identify professional development needs related to educational technology and make recommendations on how these needs can be addressed.

1.2.4. Training and Support

Administrators feel that faculty need appropriate training and support in terms of educational technology. (*A9*)

- Suggestions for a College or Institute:
    - work or study undertaken by faculty in educational technology should be recognized and supported as a professional development activity.
    - establish a multi-faceted program designed to train faculty in the use of technology in their teaching.

- Suggestions for the System (MAETT/SCOET):
    - establish a permanent professional development fund to reinforce and expand professional development activities with an emphasis on educational technology
    - identify professional development needs related to educational technology and make recommendations on how these needs can be addressed.
    - establish an instructional support team to assist colleges with the development, adaptation and use of technology in instruction.

1.2.5. Barriers to Existing Professional Development Activities

All college personnel indicated that professional development activities related to educational technology at their institution existed but various kinds of barriers excluded their attendance. For faculty (73%) these barriers include, lack of time, conflict with their teaching schedule, workload, funds/budget constraints, distance, lack of administrative support, lack of relevancy, lack of access to equipment, technical support and information. For administrators (75%), the barriers include time, distance, cost, lack of information, lack of technical support, lack of relevancy or specificity. For staff (67%), the barriers include, time, funds/budget constraints, work schedule conflict, workload, distance, internal commitment, lack of relevancy. *(F12,12a,A12,12a,Staff 14,14a; Interviews:B.Mitchell)*

- Suggestion for the System (MAETT/SCOET):
    - identify educational technology and professional development needs and analyze barriers to learning these technologies.

1.2.6. Faculty Renewal and Professional Development

There exists a concern that faculty must become technologically literate and those who do not display the interest or initiative to keep current with technology will be at a disadvantage. This is a strong concern of faculty members and educational technology "experts" in the field. It is also a signal to the Ministry of Advanced Education, Training and Technology and the post-secondary system that some effort be placed on training faculty to bring them up to date. Many new faculty, recently graduated from university, have the advantage of being exposed to some educational technologies. The majority of faculty who have been teaching at the college level for years are at a disadvantage. This poses problems for the system at large and for the students who are inadequately prepared in technology. Whatever the reason for not keeping current (lack of time, exposure, fear, etc.), these obstacles need to be overcome. Faculty are aware of this as a potential problem and wish to do something about it.
(F1F8,F8a,F9,F10,Interviews: B.Mitchell,Dahl,McLarin, Bates)

❖ Suggestions for a College or Institute:

- designate a person to coordinate professional development activities for faculty.
- provide release time for faculty to learn more about technology.
- encourage faculty to purchase their own personal computer with low or no interest loans.
- put aside money for faculty technology research projects that would benefit not only the faculty project coordinator but others in the department or the institution.

❖ Suggestion for the System (MAETT/SCOET):

- identify educational technology and professional development needs and analyze barriers to learning these technologies.

1.2.7. Not Enough Professional Development Activities for Administrators & Staff

Administrators identified that there are not enough professional development activities designed to cover managerial software. (*A1b*) Staff identified that there are not enough staff professional development activities on computer technology. (*Staff1b*). Keeping up to date with computer and software technology is of concern to administrators, faculty and staff. Any professional development opportunities should be targeted to meet the needs of all three groups.

❖ Suggestion for a College or Institute:

- provide computer and software training that would assist faculty, staff and administrators.

❖ Suggestion for the System (MAETT/SCOET):

- sponsor training on managerial software for college administrators.

1.2.8. Keeping Up with Technological Advances

There is a concern that faculty need to keep up with industry, universities, high schools and society's rapidly improving and emerging technological advances.

(F9,F10, Interviews: Bates,McLarin,Strigel)

Faculty are concerned that colleges are falling behind technological advances in society. Students coming into the college system from the K-12 system are more familiar with educational technology, sometimes with a greater knowledge than that of the instructor. Students transferring to the university level could be at a disadvantage if they are not exposed to the technologies that are available to university and K-12 students. Colleges tend to be more "applied" in their teaching approach and need to keep current with external technological advances.

❖ Suggestions for a College or Institute:
- encourage a closer ties with industry and develop methods to share information with faculty and students.
- support and encourage faculty requests for educational leave that facilitate the learning of emerging industrial, scientific or business technologies.

❖ Suggestion for the System (MAETT/SCOET):
- encourage and assist colleges in keeping up to date with technology.

1.2.9. Learning the Effective Use of Educational Technology

At the same time, faculty are concerned that they need to learn the effective use of educational technology and its instructional applications.
(F6,F7a,F8a,F9,F10:Interviews: Dahl)

While faculty wish to learn about new technologies, they are equally concerned that it be appropriate to their needs and the needs of their students. The professional activities should include the instructional techniques of using the technology in the classroom.

❖ Suggestions for a College or Institute:
- professional development activities should be designed to incorporate the effective use of technology for instructional delivery.

1.3. FUNDING

A critical issue widely identified from all the surveyed groups and identified in most of the long-answer questions within each group is the concern about funding. The concerns expressed focused on both the present and future funding amounts. There is also the concern of how the system can keep up with the advances of technology.
(F1c,F3a,F6,F7a,F9,F10,F11,F12a;A1c,A7a,A9,A10,A11;Staff 1c,Staff 9a,Staff 11,Staff 14;Student 1b, Student 6; Interviews: Bates, B. Mitchell.; OLA - Appendix F)

The question of funding is discussed in conjunction with the relevant issue. For example, the replacement of equipment or the acquisition of new equipment obviously dictates that money must be spent. Most of the issues identified are therefore linked to the issue of funding. However, a few further comments along with possible suggestions require consideration.

The following quote from a survey response articulated the concerns about funding and implementation of educational technology so well it is included here.

"Funding is needed to acquire the technology along with the time required to acquire expertise and then put it to use. It needs to be recognized that computing as a subject of study is a relatively new discipline which has substantial capital and training requirements and that, given the short life cycle of the products, these requirements are essentially ongoing. We would not consider, for example, introducing a new trades program without addressing its capital requirements and yet, over the past decade we have introduced a range of new programs with significant capital requirements and little special funding for implementation. While colleges have, in general, responded effectively to this initial challenge they have done so at significant cost to other aspects of their organization. We're now at the point of starting phase two -- I'm not at all confident we will be as successful (given that problems which were postponed during the initial phase have yet to be addressed)."[5]

- Suggestions for the System (MAETT/SCOET):
    - provide an increase in the capital money specifically targeted for educational technology. This cannot be a one-time grant but needs to continued every year in order to maintain and upgrade the equipment.
    - effective exploitation of technology is a major initiative that requires financial support above and beyond that usually supplied to an institution.

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[5] Quote from a Survey Respondent, 1991.

2. SUPPORT

2.1. EQUIPMENT

2.1.1. Replacement of Old Equipment

Old equipment needs to be replaced. Much of the equipment in the colleges and institutes is old and has not got the capabilities needed today. At the beginning of the 1980's, not enough was known about the emerging technologies to know what to expect and how to plan for purchasing equipment. As we emerge into the 1990's, standards are being set and technologies are generally better understood. We are now seeing a basic level of technology that we need to plan toward. Much of the equipment we have in the colleges is becoming obsolete. For example, software is being produced now that will not operate on equipment purchased in the early 1980's. This is the case with Windows 3.0 which is rapidly becoming a standard for instructor designed software as well as a platform for generic software such as word processing.
(F1b,F2,F3,F6,F7a,F9,F10;A1b,A6,A9;Staff1b,Staff11Staff12; Student1a;Appendix H; Interviews: Weger)

❖ Suggestions for a College or Institute:
- plan on replacing computer equipment every three to five years and budget accordingly.
- develop computing and other educational technology equipment and software plans.

❖ Suggestions for the System (MAETT/SCOET):
- develop a cohesive system-wide equipment replacement policy and budget accordingly.
- transfer some capital funds to operating funds for the purpose of replacing equipment over a four-year period. This would enable institutions to better plan equipment replacement.

2.1.2. New Equipment

New equipment needs to be purchased. Colleges need to be aware of some of the major new technologies and have to incorporate a plan to purchase new equipment, not just replace old equipment. New technologies, such as laser disc players and CD-I (CD-Interactive) players are becoming important resources for instruction. However, many audio-visual departments have not had the funding to add these to their inventory.
(F1b,F2,F3,F6,F7a,F9;A1b,A1c,A6,Staff1b,Staff1c,Staff9a, Staff11,Student 1a,1b;Appendix H)

❖ Suggestions for a College or Institute:
- libraries/audio-visual departments need to work closely with computer support departments to identify, plan and budget for new equipment.
- purchase at least one laser disc player and a CD-I player for faculty to book out.
- purchase a second laser disc player and a CD-I player that allows students or faculty to review/learn course material in a single study carrel.

- inventories of audio-visual equipment should be increased, upgraded and maintained as needs expand.
- purchase appropriate off-the-shelf software for disc (CD-I, CD-ROM, and laser disc) players.
- designate at least one large lecture theatre as a multi-media classroom that has the capabilities of connecting a large screen projection unit (VGA computer capabilities, standard Macintosh video capabilities, VHS, S-VHS and NTSC TV signals) to a laser disc player, cable TV, computer, along with stereo sound, and the standard classroom audio and visual equipment.
- develop computing and other educational technology equipment and software plans.
- plan and budget for the acquisition of newer technologies and their technical support through continuous funding of a technology resource centre.

❖ Suggestion for the System (MAETT/SCOET):

- consider funding the start up of technology resource centres.

2.1.3. Not Enough Computers

A dominant issue identified from the surveys is there are not enough computers to address the need. Of those surveyed, over half (64%) of faculty use computers for instruction while 95% of administrators and 100% of staff use computers in their position. Over half the students (66%) use computers in the classroom and over three-quarters (78%) use computers outside the classroom, at home, elsewhere in the college or in other situations. Of those faculty that do not use computers in their position now, most indicated that they anticipate using them within the next five years. *(F1b,F1c,F3a,F6,F7a,F9,A1b,A1c,A6,Staff1b,Staff8,Staff9a., Staff11; Appendix H, Interviews: McLarin).*

The demand for equipment is going to escalate very soon. If the existing supply is limited now, colleges can expect some serious access problems in the near future. On the positive side, prices for computers have dropped by half within the last year, making purchases more affordable. This coupled with computer standards becoming more discernible, enables colleges to acquire equipment that meets mid-term needs.

❖ Suggestion for a College or Institute:

- plan for an increased use of computers by both faculty and students, which will require additional access to computer labs as well as to software.

❖ Suggestion for the System (MAETT/SCOET):

- acknowledge the increased use and demand for computers, media and other forms of educational technology and provide the colleges and institutes with special funding to support this.

2.1.4. More Access to Computers

Faculty need more access to computers for course preparation. A major issue for faculty is the lack of access to computers. *(F1b, F1c,F3a, F6,F7a,F9;Inventory report[6] ; Interviews: Dahl)*

◆ Suggestions for a College or Institute:

- increase the amount of capital money available for faculty computers.
- provide a faculty technological resource area that allows access to computers and other related equipment.
- establish a faculty/staff computer incentive plan with no or low interest loans to purchase their own personal computer.
- encourage interested faculty members to take an introductory computer course that is designed to incorporate basic skills, use of telecommunications, networking skills and instructional design methods before receiving a unit for their own use.
- investigate discount plans and bulk purchases as means of increasing faculty access to computers.

2.1.5. More Access to Other Equipment

College personnel and students indicated a need for the provision of more and better access to equipment, other than computers, including such equipment as general audio-visual equipment, specialized lab equipment, telecommunications equipment, CD-ROM, laser discs. *(F1c,F2,F6,F7a,A6,Staff8,Student 1a,1b3d,4a,6; OLA - Appendix F)*

◆ Suggestion for a College or Institute:

- provide a faculty technological resource area that allows access to computers and other related equipment.
- purchase additional equipment for student access through the Library.

2.1.6. Student Access to Labs

Students and faculty have indicated that there is a lack of access to computer labs for students to complete their assignments. Labs are either restricted in use (only available to certain students) or access hours are limited. *(F1c;Student 1a,1b,3d)*

◆ Suggestions for a College or Institute:

- assess computer lab requirements (hours, access privileges and lab assistants) to ensure that these meet the needs of the student population.
- ensure that open-access time for students receives equal consideration when booking labs for instructional use.
- purchase additional hardware and software for student labs.
- consider creating a new position or expanding a present position that would be responsible for student labs, software and hardware.
- hire work-study students to assist in student access labs.
- investigate discount plans and bulk purchases as means of increasing student access to computers.

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[6] Wayne Welsh, *The 1991 Educational Technology Inventory : An Assessment of the Current Status at B.C. Colleges and Institutes* (Victoria, 1991), p.26.

2.1.7. Hardware Compatibility

Many institutions have purchased computer equipment that is not compatible with other computers on campus. This issue involves two problems, the use of old equipment that is incompatible and the lack of knowledge about equipment standards. The first issue seems to be resolving itself, with the new equipment being purchased which falls into a set of standards being adhered to by manufacturers. Computer standards are better understood and the manufacturers are making more compatible equipment. The question of incompatibility concerns purchasing two different platforms of computers (ex: Apple versus IBM). However, this doesn't pose as much of a problem now, as software and networking allow different platforms to link together. *(F1b,A1b,Staff1b,Student 3d)*

- ❖ Suggestion for a College or Institute:
    - develop a comprehensive computer networking plan that allows for different platforms to link together.

2.1.8. Funding of Equipment

All categories surveyed expressed that the existing funding for equipment (replacement and new) falls far below the existing need. *(F1c,F2,F6,F7a,F9,A1c,A7a,A9,A10,A11,Staff1c,Staff8,Staff9,Staff11, Student1b, 5a; Appendix H)*

- ❖ Suggestion for the System (MAETT/SCOET):
    - acknowledge the increased use and demand for computers, media and other forms of educational technology and provide the colleges and institutes with special funding to support this.

2.2. TECHNICAL & INSTRUCTIONAL SUPPORT

2.2.1. Technical Support

All groups were concerned with limited access to technical support to meet their technological needs. Faculty, staff and administrators indicated that just over half feel comfortable with computer technology. Students indicated that they require more training. Students have also indicated that more help during lab time would be beneficial. As well, the merging of computer technology with audio visual technologies will increase the need for both technical and instructional support in those areas. *(F1b,F3a, F6,F11,A1b,A6,Staff1b,Staff,Student 1a,1b,3d,4a)*

- ❖ Suggestions for a College or Institute:
    - create a position which has the responsibility of assisting faculty, staff and administrators with their technological needs.
    - hire work-study students to assist in student access labs.
    - develop introductory courses in using computers and word processing for students.
    - set up a 'help desk' which provides technical support for college personnel and students.

◆ Suggestions for the System (MAETT/SCOET):

- work together with instructional media representatives to determine the trends with audio visual and computer technologies and how these trends may impact on the college and institute system.

2.2.2. Instructional Support

There is a need for technical support for individual faculty who are working on specific projects or who need support on a specific question. Faculty also need instructional support to assist with instructional design and integration of technologies into the curriculum. Most instructors use computers in instruction (64%) either as a topic, as a medium for performing some task or as a medium for providing instruction or for all three functions. Those who do not use computers in instruction have indicated that it is because they need instructional support in terms of adapting the curriculum or finding enough time to research or develop appropriate software. Most of this group (74%) also anticipate using computers in instruction within the next five years. There is also a call for more professional development activities to provide information on educational technology and instructional design. Faculty require more support, both in technical and instructional terms. As well, faculty strongly indicated that they are interested in professional activities that will assist them with instructional delivery methods using educational technology. *(F1a,F2a,F3a, F13; Inventory report*[7]*;Interviews:Bates)*

◆ Suggestions for a College or Institute:

- increase support to provide assistance to faculty on an individual basis.
- hire a resource person to assist faculty with using technology in instruction. Duties would include providing faculty with the skills and information on emerging technologies and its use in instructional delivery.
- retain a group of people (or committee) who have the responsibility of providing information to the faculty at large on advances and changes. This would make it possible to keep up, make keeping up more efficient and provide professional development for faculty.
- assess computer lab requirements (hours, access privileges and lab assistants) to ensure that these meet the needs of the student population.
- plan and review technical support service with an expected increase in the use of educational technology in mind.

◆ Suggestions for the System (MAETT/SCOET):

- assist the colleges and institutes by funding a resource technology position.
- plan professional development activities focusing on using educational technology in instruction.
- work together with instructional media representatives to determine the trends with audio visual and computer technologies and how these trends may impact on the college and institute system.

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[7] *Ibid.*, p.47.

2.3. SOFTWARE

2.3.1. Out of Date Material

A number of issues present themselves which are concerned with educational software (micro, network, electronic, video and film). Most groups indicated that the software they used was out of date. Faculty and students indicated that videos especially were out of date and of poor quality. *(F1b,F6,F7a,A1b,A6 Staff 1b, Student 1a,1b,4,4a,5a)*

❖ Suggestions for a College or Institute:
  - where possible purchase annual site-licenses for computer software. Annual licenses provide up-to-date software.
  - update film and video inventories.

❖ Suggestions for the System (MAETT/SCOET):
  - investigate ways to keep colleges informed on what software is available and site-licensing information.
  - provide funding for the updating of film and video material.
  - sponsor a newsletter for college faculty that will highlight new educational software and reviews, outline costs and site-licensing information, and/or sponsor a bulletin board where this information will be accessible to all college faculty.

2.3.2. Information on Subject Specific Software

Faculty, administrators and staff indicated that finding appropriate and subject specific software is a problem. In many cases, they indicated a need for more information about what software is available. *(F1c,F2,F3a,F7,A6,Staff 11)*

❖ Suggestion for the System (MAETT/SCOET):
  - investigate ways to keep colleges informed on what software is available and site-licensing information.

2.3.3. Time to Learn & Evaluate Software

Faculty indicated they needed time to learn software applications (computer-based) as well as time to evaluate them. *(F1b,F2,F3a,F6,F7a,F9)*

❖ Suggestion for a College or Institute:
  - place priority upon locating and evaluating existing software or courseware before developing software using college resources.

2.3.4. Funding of Software & Upgrades

There is a considerable amount of concern about the expense of software, its currency and the applicable upgrades. *(F1b,F9, A7,A9,Staff 11,Staff 12, Student 1b, Student 6)*

❖ Suggestions for a College or Institute:
  - purchase ongoing annual site licenses for certain basic software. This would provide for yearly upgrades but would also incur a yearly cost.

- plan on upgrading and replacing software every three to five years and budget accordingly.
- establish software and courseware budgets for each division and department.
- investigate college-wide site-licenses and budget centrally for software that will be used by many departments (e.g., word processing, spreadsheet programs, backup software and virus checkers).

❖ Suggestion for the System (MAETT/SCOET):

- sponsor a newsletter for college faculty that will highlight new educational software and reviews, and/or sponsor a bulletin board where this information will be accessible to all college faculty.

2.3.5. Software Purchases

There is a concern about the acquisition of software in general as well as the incorrect or ineffective substitute purchases of software by Purchasing Departments. *(F1b, F3a)*

❖ Suggestions for a College or Institute:

- designate a person to work with faculty to determine software needs and ensure that the software will meet those needs.
- standardize basic software used for instructional purposes college-wide and provide routine upgrades with access to technical support services.
- alternative selections of instructional software should be reviewed by the department and purchased with funds from the departmental software budget.

2.3.6. Copyright & Site Licensing

Concern about copyright (breaking existing copyright or ownership of copyright of materials developed by college personnel) and site licensing *(F1c, F7a,F9, F10,A10;Staff1c,Staff 9a, Staff 11)*

❖ Suggestions for a College or Institute:

- draft a policy dealing with copyright infringement and inform faculty, staff and students of copyright laws.
- formulate policy dealing with the creation of software by college personnel.
- review software and courseware licensing procedures and centralize negotiation to obtain the most cost-effective agreements suitable for the intended application.
- instigate college-wide site licenses for word processing, spreadsheets, and databases.
- allocate funds for instructional software (i.e., specifically for instructional use) annually at each college or institute.

❖ Suggestion for the System (MAETT/SCOET):

- investigate whether a central organization be assigned the responsibility for negotiating special software pricing and licensing agreements on behalf of the college system.

2.4. ADMINISTRATIVE SUPPORT

2.4.1. Support & Encouragement

Faculty feel the need for administrative support and encouragement in their endeavours to use educational technology in instructional design.
(F1c,F6,F11,F12a,;Appendix H; Interviews: Dahl)

- ❖ Suggestion for a College or Institute:
    - consider offering faculty technology grants that would provide resources for research, development and implementation of educational technology into the curriculum.
- ❖ Suggestion for the System (MAETT/SCOET):
    - recognize innovative and valuable uses of educational technology by faculty through technology awards.

2.4.2. Strategy & Planning

Faculty, staff and administrators indicated there must be a strategy and plan to implement and to keep current with technology.
(F1c,F9, A1c,A6,A10,Staff1c,Staff 8,Staff 11; Interviews: McLarin,B. Mitchell; OLA - Appendix F)

- ❖ Suggestions for a College or Institute:
    - develop an organizational structure within the institution to meet the needs of administrative and instructional computing, which allows plans to reach the strategic planning level of the institution.
    - develop and adopt a plan to apply educational technology across instructional disciplines.
    - review annually the progress towards achieving divisional and institutional technology application objectives.
- ❖ Suggestion for the System (MAETT/SCOET):
    - develop a strategic plan on educational technology for the college and institute system based on a vision of the future.

2.4.3. Consultation with Staff

Staff indicated there has to be better planning and consultation of staff to meet their needs and to ensure adequate and appropriate training takes place. *(Staff 1c)*

- ❖ Suggestions for a College or Institute:
    - involve staff in the planning and evaluation of staff training.
    - designate an educational technology resource person to assist in the planning and evaluation of technology training.

2.4.4. Plan to Integrate

There needs to be a plan to integrate other technologies into instructional design and delivery, such as CD-ROM, electronic mail, telecommunications and video *(F1c; OLA - Appendix F)*

◆ Suggestion for a College or Institute:
  - undertake a college-wide review to integrate courseware wherever appropriate to enhance traditional classroom teaching.

◆ Suggestion for the System (MAETT/SCOET):
  - develop a strategic plan on educational technology for the college and institute system based on a vision of the future.

2.4.5. Special Projects

Financial support for special projects was suggested to facilitate the use of educational technology in the classroom. *(F6,F9)*

◆ Suggestion for a College or Institute:
  - consider offering faculty technology grants that would provide resources for research and implementation of educational technology in the curriculum.

◆ Suggestion for the System (MAETT/SCOET):
  - recognize innovative uses of educational technology by faculty through technology awards.

2.5. TELECOMMUNICATIONS

2.5.1. Access & Training

The use of telecommunications technology (especially electronic mail) is high among college personnel. Of those who have access to electronic mail, half (faculty) to two-thirds (administrators and staff) make use of it. However, to reach its potential this technology has to have sufficient number of users to attain a "critical mass". There is also a concern about access to electronic communication as well as sufficient training on how to use it effectively and to incorporate it into the curriculum. Faculty and administrators acknowledge that electronic communication will allow for the transfer of more information which in turn will increase its use once the access barrier has been overcome. *(F1d,F7,F9, F10,A7,A7a,Staff 1a, Staff 9 , Staff 9a,Student 4a, Inventory report*[8]*;Interviews: Strigel,Dahl,McLarin).*

◆ Suggestions for a College and Institute:
  - training in the use of electronic communications should be an on-going commitment.
  - ensure access to electronic communications is available to all instructors.
  - encourage the use of telecommunications as a classroom enhancement.

◆ Suggestions for the System (MAETT/SCOET):
  - take an active lead in disseminating information about the use of telecommunications to the colleges and institutes.
  - make recommendations on how the colleges can electronically connect system-wide and with other educational institutions.

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[8] *Ibid.*, p. 8-10.

2.6. LIBRARY RESOURCES

2.6.1. Role of Libraries

Faculty, administrators and others outside the system see an increased amount of information available to both student and college personnel. Some have indicated that this will precipitate the use of more sophisticated library resources and research skills, with direct changes in the relationship between libraries and the rest of the institution. There will be an increased pressure on faculty, librarians and students to cope with the volume of information. *(F10,A9, A10)*

◆ Suggestion for the System (MAETT/SCOET):

- work together with library representatives and the Electronic Library Network to analyze the future function of libraries, educational technology and how this will impact on the college and institute system.

2.7. ERGONOMICS

2.7.1. Working Conditions

Staff and administrators indicated that physical discomfort was an issue. One administrator observed "that most people currently using the technology are working in less than optimal conditions." While this issue was not as highly ranked as the others, it has the potential to gain relevance with the expected increased use of technology. With some research safety and comfort can be monitored and planned for with new equipment purchases, furniture purchases, lighting fixtures and space allocation.
(A1b, Staff 1b)

◆ Suggestion for a College or Institute:

- form a committee to investigate and make recommendations on the ergonomics of work areas or stations using technology.

3. EFFECTIVENESS

3.1. PEDAGOGICAL

3.1.1. Educational Value

Faculty indicated a concern about the effective use and integration of technology in terms of pedagogical value. The primary concern is not enough time to adequately evaluate software or technology used for instructional delivery. Other concerns, both positive and negative, can be exemplified by comments from the faculty surveys such as: "...students with computers are at an advantage...", or "...students develop better writing skills using computers...", or "...students progress well using computers..." On the other hand, other comments highlight a more negative attitude, "...computers take over the subject area...", or "...students find computers boring regardless of software being used." *(F1c, F9)*

Use of educational technology has to be carefully evaluated in terms of its value to learning. Most faculty have no formal training in teaching methods using educational technologies. "Existing and emerging technologies have the potential to provide students with unique experiences and to provide them with the tools to eliminate the mechanical drudgery... To exploit this potential requires that we rethink what we are doing, why we are doing it and how we are attempting to get it done. If technology is to provide a valuable contribution to education it should offer something which is not available any other way or offer it with significantly enhanced efficiencies (in terms of either cost or access)."[9] The pedagogical values of teaching and learning have to be considered along with the more functional aspects of implementing educational technology. *(Interviews: Bates, Dahl, Strigel)*

- ❖ Suggestion for College or Institute:
    - technologically related courses or professional development activities for faculty should emphasize instructional applications, instructional material evaluation (courseware, software, video, electronic bulletin boards, etc.), and instructional design and material development.

- ❖ Suggestion for the System (MAETT/SCOET):
    - develop a teaching methods course for faculty with a focus on educational technology and its appropriate use in the classroom.

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[9] Quote from a Survey Respondent, 1991.

3.2. CURRICULUM

3.2.1. Curriculum Adaptation

Curricula need to be adapted to incorporate educational technology. College personnel expect to see an increased use of computers and technology across the curricula. *(F1c, F2, F6,F9; A9)*

◆ Suggestion for a College or Institute:
- establish a multi-faceted program designed to train faculty in the use and implementation of technology in their instruction.

◆ Suggestions for a Collaborative Effort:
- offer subject specific workshops for instructors to provide direction on how they can change their methods of instructional delivery using computers and other technologies in instruction.
- provide professional development activities that encourage the implementation of educational technology in instruction.

◆ Suggestions for the System (MAETT/SCOET):
- provide funding that has to be used for research by and instruction of faculty on new instructional delivery methods using educational technology.
- engage instructional design experts to assist with subject specific workshops and to demonstrate skills to faculty.
- establish an instructional support team to assist colleges with the development, adaptation and use of technology in instruction.

3.2.2. Technological Literacy for Students

Many faculty are convinced the college students will have to become computer literate in the basic generic skills such as word processing, spreadsheets, and databases and then will have to rapidly advance to other skills (i.e., exporting/importing, telecommunications and file transfers). As well, students need to have a theoretical and conceptual understanding of computers and not just an application-specific understanding. With a theoretical base, a student will be better able to adapt to different applications and practices. *(F1b,2,9;Interviews: Strigel,Weger)*

◆ Suggestion for a College or Institute:
- discuss the content of introductory courses involving computers and review their objectives.

◆ Suggestion for the System (MAETT/SCOET):
- investigate whether a new course should be designed for students that covers generic computer literacy skills, gives the student the skills needed to understand the technology and the ability to transfer those skills to emerging technologies.

4. EXPECTATIONS

4.1. STUDENTS' FUTURE NEEDS

4.1.1. Exposure to Technology

Administrators and faculty are equally concerned (66%) that not all college and institute students have enough exposure to the technologies they will need to prepare them for the future. Most students (74%), however, expect that they will be computer literate by the time they graduate and over half (56%) feel that they are being exposed to the technologies they will need in the future. They are depending on the system to prepare them but college personnel are not sure they are meeting students' or society's expectations. This poses the problem of how to adequately prepare students for the future as well as meeting and keeping current with the requirements of industry, business and society.

Compounding the situation is the current major shift from a resource base to service and information sectors.[10] The Information Technology sector is expected to grow in B.C. to reach second place after forestry by the end of the decade[11], thereby putting more pressure on the system to expose students to technologies. Administrators and faculty have concerns about the future in terms of the demands of industry and business; greater expectations of society related to technological advances; private training institutions; and keeping current with the universities and the K-12 system. *(F4,F9,F10;A4,A9,A10;Student 5,7; Interviews: M. Mitchell,Stratford, Strigel, B.Mitchell,Weger; OLA - Appendix F)*

If instructors are not exposed to or familiar with technology, how can we expect their students to benefit. *(F4; Interviews:Strigel)*

❖ Suggestions for a College or Institute:

- incorporate generic technology skills into the classroom in order to enable the student to continue learning new technologies after graduation.
- work closely with industry and business in order to share technology resources and to offer more exposure to the technologies for students (site visits, practicums and work terms).
- sponsor professional development activities to assist faculty to become familiar and comfortable with new technologies in order that they can incorporate these skills in the classroom.
- consider joint-use and sharing of technological resources between departments.
- establish a centralized technology budget for capital that would be shared by many departments.
- designate a multi-use computer based lab for faculty and students to gain exposure to educational technology applications such as e-mail,

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[10] British Columbia. Ministry of Advanced Education, Training and Technology. *Forces of Change Influencing Education and Training, a Discussion Paper* (Victoria, 1991), p.26-27.

[11] Wolfgang Strigel. *Supply of and Demand for Resources in the Information Technology Industry* (Burnaby, B.C., 1991), p. 30.

inter-institute electronic communication capabilities, multi-media, laser disc, CD-ROM, and CD-I players.

◆ Suggestion for the System (MAETT/SCOET):

- investigate whether a new course should be designed for students that covers generic computer literacy skills, gives the student the skills needed to understand the technology and the ability to transfer those skills to new emerging technologies.
- assist the colleges with the sponsorship of professional development activities.
- assist the colleges with funding a multi-use computer based lab.

4.2. FACULTY EXPERTISE

4.2.1. The Instructor's Changing Role

Most faculty and administrators (63%) expect the role of the instructor to change because of educational technologies. They see the instructor becoming more of a facilitator, resource person and manager rather than the traditional lecturer and information provider. This new role is seen as assisting the student in becoming a more active participant in the learning process. Educational technology is primarily seen as enhancing the range of alternative instructional methods or as a supplement to the "traditional" methods of instructional delivery. Some have responded that this will create a more interpersonal and individual relationship with students. Both faculty and administrators are concerned about the importance of faculty becoming technologically literate. *(F8,F8a,F9;A8,A8a,A9,A10; Interviews: McLarin)*

◆ Suggestions for the System (MAETT/SCOET):

- take immediate action in providing faculty with professional development opportunities relating to educational technology.
- investigate the future role of an instructor and what implications this will have for the colleges and institutes.

4.2.2. Integration & Motivation

There is a general reluctance to integrate technology even though it may be beneficial to do so. Instructors have indicated that there is not enough time to find or develop appropriate software, that students need to be trained in technology and the curriculum must be adapted. They also indicated that the limited access to equipment or their lack of skill in using equipment prevents them from incorporating technology into their instructional delivery. *(F2,F6,F7; Inventory report* [12])

◆ Suggestions for a College or Institute:

- evaluate the length of release time given to faculty whose courses have to change to accommodate technology. Given the regular term schedule, faculty usually only have time in May or June for curriculum development. Greater planning time has to be made available to them earlier, perhaps up to two years before the planned change.

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[12] Wayne Welsh, *The 1991 Educational Technology Inventory : An Assessment of the Current Status at B.C. Colleges and Institutes* (Victoria, 1991), p.4

- provide release time to one member of a department so that he/she can research available software appropriate to that program area. That person can then demonstrate the selected software to other members.
- increase the amount of capital money available for faculty computers.
- incorporate a faculty/staff computer incentive plan that would lend faculty and staff at no or low interest the money needed to purchase their own personal computer.
- encourage interested faculty members to take an introductory computer course designed to incorporate basic skills, use of telecommunications, networking skills and instructional design methods before receiving a unit for their own use.
- investigate discount plans and bulk purchases as means of increasing faculty access to computers.
- provide a faculty technological resource area which allows access to computers and other technological equipment.

❖ Suggestion for a Collaborative Effort:

- articulation committees should share software application evaluations.

❖ Suggestions for the System (MAETT/SCOET):

- provide leadership in cooperation with the different program/curriculum areas by sponsoring annual workshops on how technology is being used by instructors in the curriculum.
- sponsor provincial workshops in different program areas to demonstrate and evaluate software.
- identify professional development needs for educational technology and make recommendations on how these needs can be addressed.

4.2.3. Technological Literacy

There is a specific concern about the lack of computer literacy and about the lack of technological literacy in general. Administrators and staff are more comfortable with computer technology (65%) than faculty (56%). In *The 1991 Educational Technology Inventory* faculty indicated that they are most comfortable with word processing software.[13] There is the concern that if faculty are not technologically literate how can we expect students to be well prepared in this area.
(F5c,F9;A5c,A9,Staff6;Interviews:Strigel)

❖ Suggestions for a College or Institute:

- offer more professional development opportunities for faculty in computer and technologically related areas.
- draft a professional development plan that will incorporate many different opportunities (i.e., courses, demonstrations, software/computer interest groups, video tapes covering specific software programs, etc.)
- incorporate a training program covering the basics in generic software.

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[13] *Ibid.*, p. 28.

◆ Suggestions for the System (MAETT/SCOET):

- analyze common generic computer skills and develop a series of computer courses specifically designed for faculty to learn these skills.
- establish a permanent professional development fund to reinforce and expand professional development activities with an emphasis on educational technology.

4.2.4. Outside Developments

Faculty and administrators feel that outside developments and expectations are proceeding faster than the system can keep up with. *(F9,F10;A9,A10)*

◆ Suggestion for a College or Institute:

- offer more professional development opportunities for faculty in computer and other technological related areas.

4.2.5. Students Know More Than Faculty

Some faculty are concerned that students know more than the instructors. In the short term (the next 10 years), this will occur more often. In the long term, it could be very common unless steps are taken now to encourage faculty to keep up to date with educational technology. *(F1c,F10)*

◆ Suggestion for a College or Institute:

- offer more professional development opportunities for faculty in computer related and other technological areas.

4.2.6. Emerging Technological Developments

Faculty are concerned that specific technological developments, including sophisticated developments in libraries, video conferencing, electronic communications and networking, will affect their instruction in the future. Faculty need to be kept informed about how new technologies could affect their institution. Some format to communicate effectively with faculty needs to be developed. *(F10)*

◆ Suggestion for the System (MAETT/SCOET):

- investigate the best way of keeping faculty informed about technological developments in education as well as communicate where faculty can participate in relevant professional development activities.

4.2.7. Attitudes & Educational Technology

A small number of faculty surveyed regard educational technology with reservation. A few faculty members indicated that they fear they will no longer be needed because educational technology will replace them. This type of response cannot be overlooked as an issue and must be addressed. Other faculty members regard this type of skepticism as a barrier to making progress with educational technology. *(F1c,F9; Interviews: B. Mitchell)*

◆ Suggestion for a College or Institute:

- professional development activities need to be designed to encourage participation and should address concerns over the future role of the instructor.

4.3. EXTERNAL DEMANDS

4.3.1. External Demands

There are a number of external demands which are impacting or which will impact upon the system. Most groups indicated that the system must deliver graduates who are familiar with technological applications and who can meet employment demands. The surveys and the interviews indicate that society in general, students, industry and business, all expect the colleges and institutes to keep up with technological advances.

Industry and business not only need graduates prepared and able to deal with technology, but there will be an increased need for workplace training to keep employees current. Some see the privatization of courses and training as a concern if colleges do not manage to keep up with technology to meet the training needs of industry and business. Compounding these types of issues for the system, is the decline in the enrollment of students in science and technology programs.
(Interviews: M.Mitchell,Stratford, Strigel,Weger).

Another area of concern indicated from the surveys was the need for the education sector to be a driving force in terms of the development of technology. The system has to keep apprised of what technological innovations are evolving and how they will impact the system in the long term. Specifically identified in the surveys and interviews is the emerging fibre optics technology. There is a lack of information about the technology itself and therefore, how it will impact upon the college and institute system.
(F9;Interviews: Dahl, B. Mitchell)

The changing training needs of business and industry coupled with the advances in technology are causing a "pressure-cooker" effect upon the college and institute system.
(F9,10;A9,10;Staff11,12;Student 6,Interviews: M. Mitchell, B.Mitchell,Strigel, McLarin)

◆ Suggestion for a Collaborative Effort:

- it is imperative that all institutions concerned become aware of the external pressures and recognize that action needs to be taken soon.

◆ Suggestion for the System (MAETT/SCOET):

- assist the colleges and institutes with identifying external pressures and develop action plans to deal with these pressures.

SECTION TWO - POSSIBLE SOLUTIONS

*The Standing Committee on Educational Technology (**SCOET**) is aware of the current economic realities facing the colleges and institutes. Our system simply does not have the funding to do all the things that need to be done.*

*However, some of the issues we have identified can be addressed by individual institutions even with our present limited resources. We should move quickly to find these immediately attainable solutions. The more costly issues and the system-wide issues need careful planning that builds a substantial consensus. With all these variables in mind, **SCOET** will begin the process of policy development on issues affecting educational technology.*

Section Two - Possible Solutions

Chart 1: Critical Needs.
Below is a quick reference guide or checklist of possible solutions. For the full reference refer to Section One : Critical Needs.

	Issues	College or Institute	Collaborative Effort	System
❖ **Critical Needs**	**Time**	- hire a technology co-ordinator - form committee(s) - form user groups - encourage closer ties with business - monitor trends via program advisory groups - evaluate release time - develop a training strategy	- share information through newsletters, bulletin boards, e-mail - hold workshops - share information through articulation groups	- host regular workshops - host annual conferences - encourage telecommunications - monitor trends via program advisory groups - organize regular workshops to share information - review the K-12 software evaluation process
	Professional Development (P.D)	- offer basic generic & subject-specific training - support leave to study educational technology - no or low interest loans - fund special projects - training for administrators - encourage requests to work with business, science or industry - develop a multi-faceted training program	- offer in-house training sessions open to personnel from other colleges.	- research & identify P.D. needs - establish a permanent P.D. fund - establish an instructional support team - design a generic computer course for faculty - work with OLA re: P.D. delivery - investigate ways to share information on subject specific software - analyze barriers to learning - recommend alternative methods to offer P.D. - encourage colleges to keep up-to-date - sponsor a newsletter - sponsor managerial software training
	Funding	- see specific issue for references to funding	- see specific issue for references to funding	- increase capital money for educational technology - effective use requires constant funding

Chart 2 : Support.
Below is a quick reference guide or checklist of possible solutions. For the full reference refer to Section One: Support.

	Issues	College or Institute	Collaborative Effort	System
◆ **Support**	**Equipment**	- draft a replacement policy - develop equipment & software plans - closer liaison between Libraries/ A/V depts. & Computing Services - purchase CD-ROM,CD-I,laserdisc - increase A/V inventories - designate a multi-media classroom - budget for newer technologies - establish a technological centre - plan for additional computer labs - no or low interest loans - introductory computer courses for faculty - investigate discount & bulk purchase plans - provide student access to technological equipment via Libraries - assess student lab requirements - ensure open-access student lab time - plan for more lab equipment & software - increase staffing in lab - hire student aides for labs - investigate discount & bulk computer purchases for students - develop a comprehensive network plan		- develop a system-wide replacement policy - consider transferring capital funds to operating for replacements - consider funding the start-up of technology resource centres - special funding for increased use of technologies

Chart 3 : Support (Cont'd).

Below is a quick reference guide or checklist of possible solutions. For the full reference refer to Section One: Support.

	Issues	College or Institute	Collaborative Effort	System
◆ **Support** (cont'd)	**Technical & Instructional**	- create a position for technical & instructional support - increase technical support - hire student aides for labs - develop basic computer courses for students - set up a technical support help desk - form committees - assess lab requirements - review technical & instructional support.		- assist with funding of a resource technology position - develop a plan for P.D. with a focus on educational technology - work with instructional media representatives to determine trends between audio visual & computer technologies
	Software	- consider annual site licenses - update film & video inventories - locate & evaluate existing software before development - develop a software replacement plan - develop departmental software budgets - investigate college-wide site licenses - create a software support position - standardize basic software college-wide - alternative software reviewed by departments - draft policies on software copyright & development - review licensing procedures - allocate funds for instructional software budgets		- investigate software resources - provide funding for upgrading film & video inventories - sponsor a newsletter - investigate a central organization to negotiate special software pricing & licensing agreements.

Chart 4 : Support (cont'd)

Below is a quick reference guide or checklist of possible solutions. For the full reference refer to Section One: Support.

	Issues	College or Institute	Collaborative Effort	System
◆ **Support** (cont'd)	**Administrative**	- offer technology grants for research & development - review organizational structure - develop plans to adopt educational technology across disciplines - review objectives annually - involve support staff in training programs - designate a technological resource position to assist in staff training & evaluation - college-wide review to integrate courseware to enhance teaching		- recognition of innovative & valuable projects with technology awards - develop a plan of strategy based on a vision of the future.
	Telecommunications	- on-going training in telecommunications - establish access to telecommunications for all instructors - encourage telecommunications as a classroom enhancement		- take an active lead in disseminating information on telecommunications - recommend how colleges can interconnect.
	Library Resources			- work with ELN and libraries to analyze the impact on the system.
	Ergonomics	- form a committee to investigate & make recommendations		

SECTION TWO - POSSIBLE SOLUTIONS

Chart 5 : Effectiveness.
Below is a quick reference guide or checklist of possible solutions. For the full reference refer to Section One: Effectiveness.

	Issues	College or Institute	Collaborative Effort	System
◆ Effectiveness	**Pedagogical**	- develop relevant professional development activities.		- develop a teaching methods course which includes educational technologies & their use in the classroom
	Curriculum	- establish an training program for the implementation & use of educational technology - discuss & review introductory computer courses	- offer subject specific workshops for faculty - develop professional development courses which encourage the use of educational technologies	- provide funding for the development of new instructional delivery methods - investigate developing a new course to cover basic computer literacy skills. - engage experts to assist with subject specific workshops. - establish an instructional development support team to provide leadership in curriculum development.

SECTION TWO - POSSIBLE SOLUTIONS

Chart 6 : Expectations.

Below is a quick reference guide or checklist of possible solutions. For the full reference refer to Section One: Expectations.

	Issues	College or Institute	Collaborative Effort	System
❖ **Expectations**	**Students' Needs**	- incorporate generic technology skills into the classroom - work closely with business, industry - sponsor P.D. activities - consider joint-use of technological resources - consider a centralized technology budget - designate a multi-media classroom		- investigate whether a new course should developed covering generic & conceptual skills - assist the colleges with the sponsorship of professional development activities
	Faculty Expertise	- evaluate release time - provide release time - increase faculty access to computers - no or low interest loans - encourage faculty to take introductory computer courses - investigate discount plans & bulk purchases - provide a faculty technology resource centre - develop a training plan - offer more P.D.	- articulation committees could share software application evaluations	- take immediate action to provide P.D. activities - investigate the future role of the instructor - identify P.D. needs - investigate ways to communicate technology advancements to faculty - sponsor annual workshops - sponsor workshops in different program areas - develop series of computer courses designed for faculty. - establish a permanent P.D. fund
	External Demands		- all institutions recognize external pressures & take action soon	- identify external pressures and develop action plans

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Appendix A - Terms of Reference

APPENDIX A - TERMS OF REFERENCE

Identify the issues relating to the implementation of educational technology - initiated by an investigation of the scope of educational technology - leading to a report which identifies the issues and provides recommendations on possible strategies to address those issues.

- Define what "educational technology" is and what it encompasses.
- Define users of that technology.
- Identify how each user is using each form of educational technology.
- Identify:
    1) unmet needs, latent needs, potential and possibilities.
    2) problems, issues and needs of each user.
    3) issues relating to managing and using the technology.
    4) issues that are college related, inter-college, provincial issues and system-wide issues.
    5) issues relating to the future direction of educational technology.
- Identify issues resulting from outside influences that will have a major impact (i.e., high school curriculum).
- Research and investigation of these questions in other places, in order to find out how others have addressed these issues and what new issues we can expect to face.
- From the above information, develop recommendations.
- For each recommendation, develop a proposed plan of action to address the issues, including suggested responsibility.
- Review and expand the report with an advisory group from colleges, industry, computer/technical field etc.
- Submit the final report along with the action plan to the Chief Executive Officers Committee.

Appendix B - Faculty Survey/Results

APPENDIX B - FACULTY SURVEY/RESULTS

Part A:

1) At which post-secondary institution(s) do you instruct?

Results...

158/228 surveys were completed = 69% return rate. The breakdown from each institution is as follows:

Institution	Sent	Completed
BCIT	12	12
Camosun	12	11
Capilano	12	5
Cariboo	12	8
CNC	12	8
Douglas	12	6
EKCC	12	12
ECCAD	12	4
FVC	12	12
JIBC	12	8
Kwantlen	12	8
Malaspina	12	10
NIC	12	10
NLC	12	11
NWCC	12	12
Okanagan	12	1
PMTI	12	8
Selkirk	12	5
VCC	12	7
Total:	**228**	**158(69%)**

* OLA declined to participate in the surveys as they felt their response would skew the survey results due to their tutorial and delivery system. Please see Appendix F for more information on the issues at OLA.

2) Would you define yourself as an infrequent, moderate or frequent user* of technology in an educational setting?

____Frequent (more than 4 hours per week)
____Infrequent (less than 1 hour per week)
____Moderate (1 to 4 hours per week

(*based on a full-time instructional load, part-time faculty will need to pro-rate their answer)

Results...

Overall:

Frequent	=	87 (55%)
Infrequent	=	24 (15%)
Moderate	=	47 (30%)

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3) Are you male or female? **Male____Female___**

Results...

Overall:

Female	=	51(32%)
Male	=	106(67%)
N/A	=	1(0.63%)

Relationship of Gender to Type of User:

Frequent User	Female	24
	Male	63
Infrequent User	Female	6
	Male	18
Moderate User	Female	21
	Male	25
	N/A	1

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4) How do you deliver your course material?

Classroom ____
Distance Education ____
Both ____

Results...

Overall:

Classroom	=	137 (87%)
Distance	=	2 (1%)
Both	=	16 (10%)
N/A	=	3 (2%)

Type of User	**Delivery**	
Frequent	Classroom	78
Infrequent	Classroom	19
Moderate	Classroom	40
	Total	137 (87%)
Frequent	Distance	1
Infrequent	Distance	0
Moderate	Distance	1
	Total	2 (1%)
Frequent	Both	7
Infrequent	Both	4
Moderate	Both	5
	Total	16 (10%)
Frequent	N/A	1
Infrequent	N/A	1
Moderate	N/A	1
	Total N/A	3 (2%)

Other: (please explain)

Other types of delivery noted are:
Workshop instruction, clinical labs,field, labs,library,studio

Part B:

1) **Do you use computers in instruction?** **Yes___No___**

Results...

Overall:

Yes = 101(64%)
No = 56(35%)
N/A = 1(0.63%)

Type of User/Who use or do not use computers in instruction:

Frequent	Yes	75
Infrequent	Yes	2
Moderate	Yes	24
	Total:	101
Frequent	No	12
Infrequent	No	21
Moderate	No	23
	Total:	56
Infrequent	N/A	1
	Total:	1

1a) If yes, how is the computer used: (Please feel free to check more than one type)

As the topic or object of learning (a word processing class, a computer programming class, etc.) Yes___No___

Frequent	Yes	54		
Infrequent	Yes	0		
Moderate	Yes	10	**Total Yes:**	**64 (63%)**
Frequent	No	18		
Infrequent	No	1		
Moderate	No	11	**Total No:**	**30 (30%)**
Frequent	N/A	3		
Infrequent	N/A	1		
Moderate	N/A	3	**Total N/A**	**7 (7%)**

As the medium for performing some task (using word processing to teach English as a Second Language, or a program to mark examinations)Yes___No___

Frequent	Yes	48		
Infrequent	Yes	1		
Moderate	Yes	17	**Total Yes:**	**66 (65%)**
Frequent	No	20		
Infrequent	No	0		
Moderate	No	5	**Total No:**	**25 (25%)**
Frequent	N/A	7		
Infrequent	N/A	1		
Moderate	N/A	2	**Total N/A:**	**10 (9%)**

As a medium for providing instruction (using spreadsheets to teach a finance course, satellite link to provide a lecturing series) Yes___No___

Frequent	Yes	49		
Infrequent	Yes	1		
Moderate	Yes	14	**Total Yes:**	**64 (63%)**
Frequent	No	21		
Infrequent	No	1		
Moderate	No	6	**Total No:**	**28 (28%)**
Frequent	N/A	5		
Infrequent	N/A	4		
Moderate	N/A	0	**Total N/A:**	**9 (8%)**

Other types of uses, (please explain)

Communication, administrative tool, labs, career exploration, presentation device, desk top publishing, graphics, research, simulation.

1b) Please rank the following issues as to how they effect your work as an instructor: (1-10, 1 the highest priority to 10 the lowest priority, please feel free to place equal value to some issues.)

Results...

Faculty found the most critical issues to be **(the most critical = the smaller number)**:

Not enough time to learn about educational technology and apply it in the classroom	423
Not enough computers	466
Not enough professional development workshops on educational software	514
Software out-of-date	546
Equipment out-of-date	549
Not enough technical support for your instructional needs	564
Not enough hardware compatibility (i.e. machines that do not connect together, certain printers to certain terminals, etc.)	572
Students don't have enough computer background	586
Physical discomfort when using technology (eye strain, lack of space, etc.)	702
Software too advanced	725

Comments:

Most of the general comments to the above question fell into a number of categories, including:

Need to have more up-to-date equipment	15
Need to have appropriate software	5
Need time to learn and/or evaluate technologies	4
Need for more technical support	4
Need to have more experience to make proper criticisms	2
Special software too expensive and will go out-of-date quickly	1
We have the latest equipment and 1st rate support	1
Most of the above are not an issue	1
When students use the computer for writing they are more willing to produce more interesting,error free work. The MAC is preferred, easier	1
Priority of technology in education is too low	1
Not enough space	1
Course is designed for classroom discussion and is not computer-based	1
Any issue ranked below 3 is unacceptable	1

1c) What other issues have you experienced using computers in instruction?

Results...

Many answers to this question were applicable to the questions asked in 1b). The general comments to **issues other** than already listed in 1b) are:

Need course/program specific or appropriate software	9
Need more or better access to computer labs for students	6
Difficulties instructing using equipment in the classroom	5
Need standardized software	4
Budget/funding is an issue	4
Purchasing Depts. do not purchase appropriate software	3
Need to know what choices are available	3
Need printers	3
Need larger facility	3
Need student tutors	3
Need better workbooks/textbooks to go with software	3
Need more software	2
Need to carefully evaluate software	2
Students progress well using computers	1
Students know more than faculty	1
Students have better equipment at home	1
Students with computers at an advantage	1
Too little emphasis on educational technology in the post-secondary system	1
Lack of understanding by administrators	1
Students find computers boring regardless of software used	1
Computers take over the subject area/discipline	1
Lack of appropriate sharing of resources	1
Need to revise curriculum	1
Reluctance by instructors to integrate computers	1
Course length needs to be adjusted to allow for computers in the curriculum	1
College can't keep up with industry demands	1
Software copyright	1
Need to integrate computers in all disciplines	1
Need a plan for the integration of upgrades	1
Need a plan to integrate CD-ROM, e-mail, video	1
Instruction can be enhanced especially for independent learning	1

1d) How would you rank the issues you have listed in 1c as to how they affect your work as an instructor? (Please refer to 1b for the scale).

Results...

The general ranking of other issues is as follows.

Between 1-3 (most critical)	35

Between 4-6 (not as critical)	17
Issues between 7-10 (minimal or no affect)	6

2) If you don't use computers in instruction, is it because:

Results...

- **there isn't a need** **Yes____No____**

Yes = 30
No = 41
N/A = 87

- **not enough time to find or develop appropriate software** **Yes____No____**

Yes = 51
No = 17
N/A = 90

- **students must be trained to use computers** **Yes____No____**

Yes = 27
No = 34
N/A = 97

- **curriculum must be adapted** **Yes____No____**

Yes = 42
No = 22
N/A = 94

- **other (please explain)**

Limited Access or Lack of equipment	21
Need Release time to learn and develop	4
Lack of computer literacy/experience	2
They would be supplemental to course	1

3) If you don't use computers in instruction, do you anticipate using computers within the next five years? Yes____No____

Results...

Yes = 58
No = 20
N/A = 80

3a) If yes to #3, what resources (time, equipment, assistance, etc) do you need to help you make the transition?

Results...

Equipment	35
Time (to learn, develop, evaluate)	27
Training (workshops, courses,seminars)	13
Support (Technical, Instructional)	11
Acquisition of software	9
Don't know	2
Assessment of software	1
Development should be a provincial project	1
Needs analysis on curriculum design	1
Financial commitment from government and institution to keep pace with industry	1
Information on available software	1
Direction of effective usage	1

4) Do you feel that students are being exposed to the technologies that they will need in the future? Please explain.

Results...

Yes = 48 (30%)
No = 52 (33%)
To some extent but... = 33 (21%)
N/A = 25 (16%)

5) Do you personally own a computer? **Yes_____No_____**

Results...

Yes = 116 (73%)
No = 42 (27%)

5a) If you do, is it at home or in the office? **Home_____Office_____**

Results...

116/158 responded Yes to 5) and of those:

Home = 94 (81%)
Office = 3 (3%)
Both (Home & Office) = 19 (16%)

5b) Do you operate a college owned computer? Yes______No_____

Results...

Yes = 129 (82%)
No = 29 (18%)

5c) Do you feel comfortable with computer technology?

Yes___

No___
Moderately___

Results...

Overall:
Yes = 87 (56%)
No = 15 (9%)
Moderately = 55 (35%)
N/A = 1 (0.63%)

Type of User/Comfort level

Frequent	Yes	64
Frequent	No	5
Frequent	Moderately	17
Frequent	N/A	1
Infrequent	Yes	5
Infrequent	No	6
Infrequent	Moderately	13
Infrequent	N/A	0
Moderate	Yes	18
Moderate	No	4
Moderate	Moderately	25
Moderate	N/A	0

6) How can your institution help you keep up-to-date with technologies related to your field?

Results...

Provide time to learn, evaluate, assess, implement/integrate	56
Provide equipment & software (more/better access to)	37

Provide workshops, seminars, conferences	34
Provide In-house training/courses	29
Provide software demonstrations for information, review & assessment	10
Provide plan/strategy	8
Provide information/communication on topic	6
Provide subscriptions to related journals/publications	4
Provide more technical support to meet needs	4
Encourage work terms/ contact with industry/business	3
Provide administrative support & encouragement:	2
Provide memberships to national/international assoc.	1
Individual's responsibility	1
Financial support for special projects	1
Not answered	15

7) Do you use other technologies in instruction (video, laser disk, CD-ROM, teleconferencing, electronic mail,etc.)?

Results...

Overall:

Yes = 117 (74%)
No = 30 (19%)
N/A = 11 (7%)

If yes, please list them.

Video	93
E-Mail	39
Teleconferencing	16
Laser	11
CD-ROM	8
Overhead Projectors	5
Lab equipment (specialized)	5
Fax	4
Audio	4
Slides	4
Electronic databases	2
Film	2
VMS	2
LCD Units	2
Electronic conferencing	1
Audio visual	1
Interactive television	1
Braillers	1
InterNet	1
Scanner	1

7a) What are the issues related to these types of educational technology?

Results...

Availability and Access to equipment	38
Training	15
Cost/Funding	16
Video/Film is of poor quality or out of date	11
Time to use technology effectively	6
Not enough educational material	5
Access to electronic communications	3
Students must be aware of new technologies	1
Decision making	1
Licensing	1
Central support	1
Information on what is available	1
Copyright	1
Privacy laws	1
Use of SIN #	1
Teleconferencing needs front end organization	1
Limited schedule for interactive television	1
Concerns about what is used in industry	1
No issues	2
Not answered	83

8) Do you think the traditional role of the instructor will change because of educational technologies? Yes ____ No______

Results...

Overall:

Yes = 100(63%)
No = 48(30%)
N/A = 10(6%)

User Type/Change in Instructor's Role

Frequent	Y	51
Frequent	N	31
Frequent	N/A	5
Infrequent	Y	19
Infrequent	N	3
Infrequent	N/A	2
Moderate	Y	30
Moderate	N	14
Moderate	N/A	3

8a) If yes, how?

Results...

Instructor will become more of a Facilitator/Coach/Manager/Resource Person than lecture/information provider	42
Enhances range of alternative methods and/or supplements traditional method of instructional delivery	36
Faculty must become technologically literate	15
More of an interpersonal/individual relationship with students	7
Little change	5
Not Answered	8

9) What issues relating to educational technology do you see evolving within the next five years that will affect your instruction, and what recommendations do you have?

Results...

Concern for training/upgrading of faculty to become technologically literate	19
Concern about funding and available capital for equipment and software	18
Use of technology to supplement or replace traditional instructional delivery (general 4, interactive 3, desk top video 2,computers 2, computer laser disks 1,simulations 1, test banking 1, distance education 1, conferencing 1)	16
Concern for keeping up with industry, universities, high schools and society in general	13
Improved technological advances in hardware and software	13
Students will have to become more technologically literate	9
Concern about access/acquisition of equipment and software	7
Rapid technological advances	6
Concern about the effective use and integration of technology into instruction	5
Increased use of computers	4
Fear of no longer needing faculty	2
Integrate computers into all the courses	2
Less need for traditional classrooms	2
Transfer of more information	2
Copyright	2
Time to learn/develop/integrate	2
Development of software	1
Site licensing	1
Trades and technology will become privatized because colleges don't keep up	1
Presumption that new technology will mean faculty will be more productive	1

More up-to-date central information	1
Displacement of support staff and heavier workload of faculty	1
Inter-Institutional electronic mail	1
Industry looks for the graduate's attitude not just practical skills or academic standing	1
Using CAI to the determent of traditional classroom teaching	1
Using computers (spell and grammar checks) to the determent of the student	1
Hiring of an educational specialist in computing	1
Needs assessment	1
One on One versus instruction by video	1
Self-paced versus group instruction	1
Students must own a computer	1
None	4
Not answered	46

Recommendations:

Must provide time and training/upgrading of faculty	8
Must provide funding/resources	8
Must keep current	3
Integrate computers into all courses	2
Increase computer literacy	1
Provide accessibility to all students	1
College needs to do needs assessment	1
Need more computers	1
Need proper planning	1
Co-ordination of funding and use throughout college	1
Colleges need to help all students acquire a computer	1
Purchase interactive video equipment	1

10) Are you aware of any outside influences of educational technology that will affect your instruction in the future? If so, please explain them.

Results...

Funding (Lack of, Need for, & cutbacks)	12
Raised expectations in society and other outside developments	12
Demands of Business and Industry	9
Specific technological developments (live video conferencing 2, self-paced video 1, video 1, laser 1,networking 1, computers 1,electronic communications 2)	9
High schools students already familiar with technology	7
Sophisticated library technology	3
Better facilities at the universities	2
Pre-packaged multi-media lectures	1
Instructors not informed	1
Training/Retraining of the industrial sector	1
Private colleges	1
Need for a task force to monitor technology and key factors of economy	1
Copyright	1
Time	1
Space	1

Distance Education	1
Politics	1
Attitudes of Administrators and Educators	1
Not aware of any issues	24
Not answered	74

---

11) What professional development activities would assist you in keeping up-to-date with educational technologies?

Results...

Workshops/Sessions	41
Release time	25
Training on specific applications/technologies	24
Seminars	17
Trade shows and demonstrations	16
Courses on applications	15
Information on available, current technologies	15
Regular in-house training/activities	10
Conferences	9
Meetings with other users/colleges/institutions	6
Work terms with industry	5
More funding for professional development	5
Course on advanced instructional techniques/design	5
Professional development activities	4
Professional journals/literature	4
Enough professional development activities already	3
More technical support	2
Developing interest in instructors	1
Access to current software	1
Library	1
Central educational technology centre	1
Newsletters (B.C., Canadian, International)	1
Catalogues	1
Anything would be an improvement	1
Not answered	19

---

12) Are there existing professional development activities easily available to you **now?** Yes_____No_____

Results...

Overall:
Yes = 73 (46%)
No = 67 (42%)
N/A = 18 (11%)

Type of User/Professional Development Activities

Frequent	Yes	42
Frequent	No	34
Frequent	N/A	11
Infrequent	Yes	10
Infrequent	No	12
Infrequent	N/A	2
Moderate	Yes	21
Moderate	No	21
Moderate	N/A	5

If yes, please list some of them:

Results...

Courses/workshops/seminars	48
Committees/professional associations	8
Conferences	8
Professional development leave	7
Third party courses/private/vendor	5
Continuing education courses	4
Research	3
Manuals/Tutorials	2
Resource people	1
Not answered	7

12a) Are there any barriers preventing your participation in these activities?
Yes_____No______

Overall:

Yes = 116 (73%)
No = 28 (18%)
N/A = 14 (9%)

Type of User/Barriers

Frequent	Yes	64
Frequent	No	14
Frequent	N/A	9
Infrequent	Yes	21
Infrequent	No	3
Infrequent	N/A	0
Moderate	Yes	31
Moderate	No	11
Moderate	N/A	5

If yes, please explain:

Results...

Time	60
Funds/budget constraints	48
Availability/schedule conflict	23
Workload	13
Distance	6
Lack of administrative support	6
Lack of relevancy/applicability	4
Lack of access to equipment	4
Lack of technical support	2
Lack of information	2
Need	1
Space	1
Not answered	3

13) Please check any of the following professional activities you would be interested in taking:

Results...

Software specific for your curriculum	90
Using technology in the classroom	90
Computer graphics	75
Desktop publishing	75
Using computers to communicate with other professionals	69
Audio/visual technologies	65
Course authoring	54
Word processing	51
Multi-media	48
Distance Education technologies	43
Databases	43
Spreadsheets	42
Technology for libraries and/or research	34
Hardware	32
Introduction to computers	26

Other Interests:

PLC software utilization
Operating systems
Network operating systems
Networks and Networking
CAD
Advanced Math

Expert systems
Artificial Intelligence
Geographical Information Systems (GIS)
Computerized science labs
Technology for the Disabled

******

Thank you for taking the time to complete this survey. If you have any additional comments please use the following space and attach extra paper if necessary.

Comments (some paraphrased)

BCIT	I	In the program students use computers for report writing, as well, there are 3 courses which deal with computers only.
BCIT	F	We need to get on the ball pretty quick. We are falling behind every day, which will cost our competitive position.
Camosun	F	I am encouraged by the activities of SCOET and would like to be part of the shaping of the Ed. Tech. future. Rodger K. Moore
Camosun	M	Thanks - Bill Murphy.
Camosun	F	The major problem lies with government funding.
CNC	M	Need standard plan for hardware system-wide, need more computers for faculty.
JIBC	M	Our program is new and in the process of development. They are as usual based upon client expressed need. As we grow, we will then have an idea of the type of technology we will require. This is the main reason for the lack of information to you in this survey.
FVC	M	Education must lead technology not technology leading education.
FVC	F	Money used for this survey would be better used for computers for students. Dr. Woodside, Physics Instructor.
KWA	I	Too many other things to do that need to be done, computers cannot do or teach my areas!
NIC	I	Excellent suggestions when do we start.
NLC	F	Good Luck, Much needs to be done, I don't see where the money will come from and it will take a lot of money.
NLC	M	Short course would be most beneficial to me.
VCC	M	Bothers me to see admin. with latest hardware while students suffer with old inadequate machines. What is more important laser memos or students' needs.
VCC	F	I see a great need for a faculty level educator computer expert to guide, facilitate & advise on matters of computers & curriculum development.
OKAN	F	Teacher training, more up to date equipment, change classrooms to exciting places to learn in, overhead projection, more focus to a/v activity/project
BCIT	F	For the Trades Look,see,handle,listen,sense - there is no substitute. P.E. Mills. 278-4831

Appendix C - Administrator's Survey/Results

APPENDIX C - ADMINISTRATORS' SURVEY/RESULTS

Part A:

---

1) At which post-secondary institution are you employed?

Results...

43/57 surveys were completed = 75% return rate. The breakdown from each institution is as follows:

Institution	Sent	Completed
BCIT	3	3
Camosun	3	3
Capilano	3	1
Cariboo	3	2
CNC	3	2
Douglas	3	2
ECCAD	3	2
EKCC	3	2
FVC	3	3
JIBC	3	3
Kwantlen	3	3
Malaspina	3	3
NIC	3	2
NLC	3	2
NWCC	3	3
Okanagan	3	2
PMTI	3	0
Selkirk	3	3
VCC	3	2
Total:	**57**	**43 (75%)**

* OLA declined to participate in the surveys as they felt their response would skew the survey results because of their tutorial and delivery system. Please see Appendix F for more information on the issues at OLA.

---

2) Would you define yourself as an infrequent, moderate or frequent user of technology in an educational setting?

____Frequent (more than 4 hours per week)
____Infrequent (less than 1 hour per week)
____Moderate (1 to 4 hours per week)

Results...

Frequent	=	29 (67%)
Infrequent	=	5 (12%)
Moderate	=	9 (21%)

3) Are you male or female? Male____ Female___

Results...

Overall:

Female = 9 (21%)
Male = 33(77%)
NA = 1 (2%)

Relationship of Gender to Type of User:

Frequent User	Female	4
	Male	24
	N/A	1
Infrequent User	Female	3
	Male	2
Moderate User	Female	2
	Male	7

Part B:

1) Do you use computers in your administrative position? Yes___No____

Results

Yes = 41(95%)
No = 2(5%))

1a) If yes, how is the computer used:

Results...

Word Processing	29(70%)
Electronic Mail	19(46%)
Spread Sheets	18(43%)
Other Types of Uses: (Library 2,Planning 2, DTP 1, MIS 3, Scheduling 1, VAX 1, Purchasing 1)	11(27%)
Graphics	8(20%)
Databases	6(15%)
Budget	5(12%)
Statistics	5(12%)
Student Records	5(12%)
Not Answered	5(12%)

1b) Please rank the following issues as to how they affect your work as an administrator: (1-10, 1 the highest priority to 10 the lowest priority. Feel free to place equal value to some issues.)

Results...

Administrators found the most critical issues to be **(the most critical = the smaller number)**:

Not enough time to learn about educational technology and apply it to administrative functions	156
Equipment out-of-date	173
Not enough professional development workshops on management software	176
Not enough hardware compatibility (i.e., machines that do not connect together, certain printers to certain terminals, etc.)	179
Not enough computers	180
Software out-of-date	183
Not enough technical support for your administrative needs	202
Physical discomfort when using technology (eye strain, lack of space, etc.)	222
Software too advanced	257

Comments:

Other comments include:

Absence of networks across micros affect both hard ware & software issues
More exposure to new software and applications
Need a computer on all staff's desks
Need better network software
Need to have more up-to-date equipment
None of the above (1b) affect my work as an administrator.

1c) What other issues have you experienced using computers?

Results...

The general comments of **issues other** than already listed in 1b are:

Need better access (money &/or support) to electronic communications	7
Need more effective & easier technology	5
Need software standardization	4
Need networking	2
Not enough printers	2
Need more space	2
Lack of understanding by senior administrators	1
Lack of keyboarding skills	1
Time to use the equipment	1
Need a provincial strategy to keep-up with technology	1
Need more computer literacy	1
Poor manuals	1

1d) How would you rank the issues you have listed in 1c as to how they affect your work as an administrator? (Please refer to 1b for the scale).

Results...

The general ranking of other issues is as follows:

Between 1-3 (most critical)	16
Between 4-6 (not as critical)	3
Between 7-10 (minimal or no affect)	3

2) If you don't use computers as an administrator, do you anticipate using computers within the next five years?Yes____No____

Results...

Yes = 5
No = 0
N/A = 38

3a) If yes to #2, what resources (time, equipment, assistance, etc) do you need to help you make the transition?

Results...

Of the 5 who will make the transition in the next five years (2), they require the following support:

Integrated package e.g. PROFS
Time and training
Time to take a training program, portable equipment, technical support, relevant software.
Hardware,software,training in databases.
Hardware,software,training,back up support (most important)

4) Do you feel that students are being exposed to the technologies that they will need in the future? Please explain.

Results...

Yes = 11(25%)
No = 10(23%)
To Some extent but... = 14(32%)
N/A = 8(19%)

5) Do you personally own a computer? **Yes______No______**

Results...

Yes	=	31(72%)
No	=	12(28%)

5a) If you do, is it at home or in the office? **Home______Office______**

Results...

Home	=	24(77%)
Office	=	0(0%)
Both (Home & Office)	=	7(22%)

5b) Do you operate a college owned computer? **Yes______No______**

Results...

Yes	=	41(95%)
No	=	2(5%)

5c) Do you feel comfortable with computer technology?

Yes___

No____

Moderately___

Results...

Overall:

Yes	=	29(67%)
No	=	0(0%)
Moderately	=	14(33%)

Type of User/Comfort level

Frequent	Yes	22
Frequent	Moderately	7
Infrequent	Yes	2
Infrequent	Moderately	3
Moderate	Yes	5
Moderate	Moderately	4

6) How can your institution help you to keep up-to-date with technologies related to your position?

Results...

Provide In-house training/courses	15
Provide equipment & software (more/better access to)	9
Provide time to learn, evaluate, implement/integrate	8
Provide more technical support to meet needs	7
Provide information/communication on topic	6
Provide workshops, seminars, conferences	4
Provide plan/strategy	4
Provide software demonstrations for information, review & assessment	3
Provide administrative support & encouragement	2
Provide subscriptions to related journals/publications	1
Individual's responsibility	1
Not answered	5

7) Do you use other technologies (video, laser disk, CD-ROM, tele-conferencing, electronic mail,etc.)?

Results...

Overall:

Yes = 39 (91%)
No = 3 (7%)
N/A = 1 (2%)

If yes, please list them.

E-Mail	34
Teleconferencing	19
Video	14
CDRom	11
Voice Mail	3
Fax	2
Conferencing	2
File Transfer	1
Laser	1
A/V Equipment	1

7a) What are the issues related to these types of educational technology?

Results...

Funding (lack of funds/access)	9
Effective use and appropriate skill level	6
Lack of widespread use	4
Reliability/Technical support	2
No Issues	2
Need for communication networks	2
Need the time to learn and teach	2
Lack of standardization	1
Institutions driven by computers rather than A/V	1
Increased expectations	1
Preparation time involved	1
Not answered	21

8) Do you think the traditional role of the instructor will change because of educational technologies? **Yes_____** **No______**

Results...

Overall:

Yes = 27(63%)
No = 11(26%)
NA = 5(12%)

User Type/Change in Instructor's role

Frequent	Y	19
Frequent	N	7
Frequent	NA	3
Infrequent	Y	4
Infrequent	N	1
Moderate	Y	4
Moderate	N	3
Moderate	NA	2

8a) If yes, how?

Results...

Instructor will become more of a Facilitator/Coach/Manager/Resource Person than lecturer or information provider:	9
Enhances range of alternative methods or supplements traditional method of instructional delivery	8
Faculty must become technologically literate	5
More of an interpersonal relationship with student	3

Not Answered	2

9) What issues relating to educational technology do you see evolving within the next five years that will affect your institution, and what recommendations do you have?

Results...

Continued trend of expanded use/integration of computers and technology in instruction/education	17
Concern about funding, allocation of resources and costs	12
Concern that faculty should have appropriate training and support	7
Increased use of Library/Media centres who will become key components for the handling of educational technology	3
Concern that aging faculty must become computer/technological literate	3
Changes in security, censorship or copyright	2
Continued trend for students to be well-versed in educational technology	1
Increasingly sophisticated use by business and industry	1
Concern that some might think that educational technology could replace faculty	1
Not answered	6

Recommendations:

Funding and clearinghouse of information
Expansion of facilities needed
Equipment to participate
Workshops and courses to train instructors on the use of technology as well as facilitator training.
Require students to have a high level of computer literacy as a basic entry to higher education.

10) Are you aware of any outside influences of educational technology that will affect your institution in the future? If so, please explain them.

Results...

Improvement in specific technologies could impact cost/access/effectiveness: (Library 3; Laser technology 1;satellite 1; shared databases 1)	6
Keeping current with business and industry	4
Private training schools taking over traditional role of college/institutes	2
Business in-service training	2
Lack of funds	2
Lack of strategy	2
Other	2
Copyright/censorship	1
Lack of funds will drive education to serve students through educational technology	1
Change in delivery	1
No	3
Not answered	13

11) What professional development activities would assist you in keeping up-to-date with educational technologies?

Results...

Annual Information Sharing	6
Courses	5
Time & Money	4
Hands-on experience with new technology	3
Workshops/Information sessions	3
Administrative software applications	3
Demonstrations	3
In-house support	2
Update courses for management	2
Circulation of literature/reading	2
Discussions with other institutions	1
Newsletters	1
Information on Bulletin Boards	1
Availability of tools	1
Evaluation workshops	1
Centralized effort to identify vendors	1
Already enough professional development activities	1
Not answered	8

12) Are there existing professional development activities easily available to you now? Yes______No______

Results...

Overall

Yes	=	31 (72%)
No	=	8 (19%)
N/A	=	4 (9%)

Type of User/Professional Development Activities

Frequent	Y	19
Frequent	N	7
Frequent	NA	3
Infrequent	Y	4
Infrequent	N	0
Infrequent	N/A	1
Moderate	Y	8
Moderate	N	1
Moderate	NA	0

If yes, please list some of them:

Traditional application courses/workshops/seminars	18
Third Party courses/Private/Vendor	5
Government sponsored events	5
Conferences	4
Resource People (in-house)	3
Administrative committees	2
Continuing Education	1
Manuals	1

12a) Are there any barriers preventing your participation in these activities?

Yes_____No______

Results...

Overall:

Yes = 32 (75%)
No = 10 (23%)
N/A = 1 (2%)

Type of User/Barriers

Frequent	Y	23
Frequent	N	6
Frequent	NA	0
Infrequent	Y	2
Infrequent	N	2
Infrequent	N/A	0
Moderate	Y	7
Moderate	N	2
Moderate	NA	0

If Yes, please explain:

Time	27
Distance	9
Cost	7
Lack of knowledge about activity	3
Lack of technical support	1
Not at the right level	1
Not tailored or specific	1
Need more professional/industrialactivities	1

13) Please check any of the following professional activities you would be interested in taking:

Results...

Distance Education technologies	20
Software specific for your position	19
Spreadsheets	18
Using computers to communicate:	17
Computer Graphics	16
Desktop Publishing	15
Databases	15
Technology for libraries/research	12
Audio/Visual technologies	11
Multi-media	9
Wordprocessing	7
Course authoring	6
Hardware	4
Introduction to computers	3

Other interests:
Hard disk management
Overview of software packages
Advanced level stuff
Simulation software
Assessing application and their application to education
Electronic networks for scholarly communication
Scheduling software
Executive information systesm
SRS workshops

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Thank you for taking the time to complete this survey. If you have any additional comments please use the following space and attach extra paper if necessary.

No comments.

Appendix D - Staff Survey/Results

APPENDIX D - STAFF SURVEY/RESULTS

Part A:

1) At which post-secondary institution are you employed?

Results...

43/57 surveys were completed = 75% return rate. The breakdown from each institution is as follows:

Institution	Sent	Completed
BCIT	3	3
Camosun	3	3
Capilano	3	3
Cariboo	3	2
CNC	3	3
Douglas	3	1
EKCC	3	2
ECCAD	3	2
FVC	3	3
JIBC	3	2
Kwantlen	3	3
Malaspina	3	0
NIC	3	3
NLC	3	2
NWCC	3	2
Okanagan	3	2
PMTI	3	3
Selkirk	3	2
VCC	3	2
Total:	**57**	**43 (75%)**

* OLA declined to participate in the surveys as they felt their response would skew the survey results due to their tutorial and delivery system. Please see Appendix F for more information on the issues at OLA.

2) Would you define yourself as an infrequent, moderate or frequent user of technology in an educational setting?

____Frequent (more than 4 hours per week)
____Infrequent (less than 1 hour per week)
____Moderate (1 to 4 hours per week)

Results...

Overall:

Frequent = 37 (86%)

Infrequent = 1 (2%)

Moderate = 5 (12%)

---

3) Are you male or female? **Male____Female___**

Results...

Overall:

Female = 35 (81%)

Male = 8 (19%)

Relationship of Gender to Type of User

Frequent User	Female	29
	Male	8
Infrequent User	Female	1
	Male	0
Moderate User	Female	5
	Male	0

Part B:

1) Do you use computers in your position? **Yes___No____**

Results...

Yes = 43 (100%)

No = 0 (0%)

1a) If yes, how is the computer used:
(Please feel free to check more than one type)

Results...

Word Processing	39(90%)
Electronic Mail	26(60%)
Database management	19(44%)
Electronic communication	18(41%)
Spreadsheets	17(40%)
Graphics	16(37%)
Student records management	15(34%)
Statistical analysis	10(23%)
Electronic databases	6(14%)
Electronic bulletin boards	5(12%)
Marking of tests	4(9%)

Bibliographic searching	4(9%)
Library circulation management	3(7%)

Other (please specify):
LCD/ video
Accounting
Payroll
Purchasing
Distance Education

1b) Please rank the following issues as to how they affect your work as support staff: (1-10, 1 the highest priority to 10 the lowest priority. Feel free to place equal value to some issues.)

Results...

Staff found the most critical issues to be **(the most critical = the smaller number)**:

Not enough time to learn about educational technology and apply it to your position	147
Not enough professional development workshops on computer technology	163
Not enough hardware compatibility (i.e., machines that do not connect together, certain printers to certain terminals, etc.)	164
Not enough technical support for your needs	184
Equipment out-of-date	198
Software out-of-date	201
Physical discomfort when using technology (eye strain, lack of space, etc.)	216
Not enough computers	222
Software too advanced	259

Comments:

No hard drive and Carpel Tunnel syndrome limits the time I can use equipment
No problems, system works well
Technology changes rapidly, not enough money, not enough consideration to training
Our office is quite up-to-date with hardware and software

1c) What other issues have you experienced using computers in your position?

Results...

Lack of training	8
Need better planning with consultation of staff	5
System problems (response time, "down-time")	4
Software compatibility problems between departments	4
Funding	2
Rapid advance of technology and staying current	2
Frustration with equipment standardization	1
Funding for technologies other than computers	1
Software incompatible with business/industry	1

Need printers	1
Copyright	1
Viruses	1
Paper waste management	1
Increased expectations for report generation	1
None	2
Not answered	4

1d) **How would you rank the issues you have listed in 1c as to how they affect your work as support staff? (Please refer to 1b for the scale).**

Results...

The general ranking of other issues is as follows:

Between 1-3 (most critical)	19
Between 4-6 (not as critical)	7
Between 7-10 (minimal or no affect)	5

---

2) **If you don't use computers in your position, is it because:**

- **there isn't a need** **Yes____No____**

Yes = 0
No = 2
N/A = 41

- **not enough time to find or develop appropriate software** Yes____No____

Yes = 2
No = 0
N/A = 41

- **other (please explain)**

Use could be increased and be more efficient	1
Lack of training and skill	1

---

3) **If you don't use computers in your position, do you anticipate using computers within the next five years?** **Yes____** **No____**

Results...

Yes = 2
No = 0
N/A = 0

3a) If yes to #3, what resources (time, equipment, assistance, etc) do you need to help you make the transition?

Results...

Professional Development Time	2
Technical support and assistance	2

4) Do you feel that students are being exposed to the technologies that they will need in the future? Please exp

Results...

Yes = 15 (34%)
No = 7 (16%)
To some extent but... = 4 (9%)
N/A = 17 (40%)

5) Do you personally own a computer? Yes______No_____

Results...

Yes = 24(56%)
No = 19(44%)

5a) If you do, is it at home or in the office? Home____Office____

Results...

Home = 22 (91%)
Office = 0 (0%)
Both (Home & Office) = 2 (8%)

5b) Do you operate a college owned computer? Yes___No___

Results...

Yes = 42 (98%)
No = 0 (0%)
N/A = 1 (2%)

5c) What type of computer do you use?

A terminal hooked up to a mainframe_____

Yes = 20 (47%)
No = 23 (53%)

A desktop computer (it has its' own disk drive)______

Yes = 33 (77%)
No = 10 (23%)

5d) Is the software you use compatible with software that faculty/administrators use? Yes_____No______

Results...

Yes = 27 (63%)
No = 10 (23%)
N/A = 6 (14%)

5e) Can faculty/administrators upload a file or give you a file on a disk for you to work on? Yes_____No______

Results...

Yes = 28 (65%)
No = 11 (26%)
N/A = 4 (9%)

5f) If not, do you have to re-type something that a faculty/administrator has already typed?

Results...

Yes = 6 (14%)
No = 4 (9%)
Sometimes = 7 (16%)
N/A = 26 (60%)

---

6) Do you feel comfortable with computer technology?

Yes_____
No _____
Moderately_____

Overall

Yes	=	27 (63%)
No	=	2 (5%)
Moderately	=	14 (32%)

Type of User/Comfort Level

Frequent	Yes	26
Frequent	No	1
Frequent	Moderately	10
Infrequent	Yes	0
Infrequent	No	0
Infrequent	Moderately	1
Moderate	Yes	1
Moderate	No	1
Moderate	Moderately	3

---

7) Do you use electronic mail to communicate with faculty/staff/administrators at your college?

Results...

Yes	=	25 (58%)
No	=	16 (37%)
N/A	=	2 (5%)

---

8) How can your institution help you keep up-to-date with technologies related to your field?

Results...

Provide time to learn (professional development)	13
Provide workshops, seminars, conferences	12
Provide in-house training/courses	12
Provide subscriptions to related journals/publications	4
Provide more technical support	3
Provide equipment and software (more or better access to)	3
Provide information/communication on the topic	2
Provide plan/strategy	1
Provide funds for professional development	1

Provide Employer assisted purchase plan	1
Provide access to software demonstrations (trade shows)	1
Provide better documentation	1
Not answered	8

---

9) Do you use other technologies in your position (video, laser disk, CD-ROM, tele-conferencing, electronic mail,etc.)?

Results...

Yes = 24(56%)
No = 13(30%)
N/A = 6 (14%)

If yes, please list them.

Electronic mail	17
Video	7
Teleconferencing	5
CD-ROM	4
Laser disk	4
Specialized equipment	3
Audio Visual equipment	1
Electronic databases	1

9a) What are the issues related to these types of educational technology?

Results...

Availability & Access to equipment	5
Cost/Funding	5
Ease of use	3
Training	2
Time to use technology effectively	2
Access to electronic communications	1
Copyright	1
Technical support	1
Not answered	32

---

10) Do you think your role in the institution will change because of educational technologies? Yes_____No______

Results...

Overall:
Yes = 19(44%)
No = 21(48%)

N/A = 3(7%)

User Type/Change in Instructor's role

Frequent	Yes	16
Frequent	No	18
Frequent	N/A	3
Infrequent	Yes	0
Infrequent	No	1
Infrequent	N/A	0
Moderate	Yes	3
Moderate	No	2
Moderate	N/A	0

If yes, how?

Responsibilities will broaden	6
Constant upgrading of skills	4
Less manual/mundane work	3
Better communications	2
Change in specifics	2
Streamlining of present system	2
Less need for clerical support	1
Limited change in duties	1

---

11) **What issues relating to educational technology do you see evolving within the next five years that will affect your position, and what recommendations do you have?**

Results...

Improved technological advances in specific equipment or software applications	13
Concern about training and upgrading of staff	10
Concern about funding and available capital for equipment and software	6
Copyright	1
Increasing access for physically disabled	1
Better communication	1
Concern about more time managing system	1
Not answered	15

Recommendations:

Don't cut out human element	1
Need lead time to develop guidelines and comfort zone	1
Support of training/upgrading	1
Technical support	1
Education needs to take a proactive role in the anticipation and establish a leadership role in answering society's needs	1
More co-operation	1
A universal province college system to handle student registration, accounting,	

payroll, personnel which would provide the Ministry with accurate information	1

---

12) Are you aware of any outside influences of educational technology that will affect your position in the future?

Results...

Overall:

Yes = 13(30%)
No = 7(16%)
N/A = 25(58%)

If so, please explain them.

Constant upgrading of technology	2
Ministry requirements	2
High school students already familiar with technology	1
National economy	1
Educational priorities	1
Privatization	1
Greater access to library collections	1
Demands of business	1
Enhancement of distance education and its delivery	1
Greater expectations	1
Lack of retraining time	1

---

13) What types of professional development activities would assist you in keeping up-to-date with educational technologies?

Results...

Workshops/sessions	11
Training on specific applications/technologies	9
Release time to learn	5
Communication (networking) with other users	3
Courses on applications	3
Information on available, current technology	2
Conferences	2
Seminars	2
Newsletters	1
Publications	1
Documentation	1
Demonstrations (Industry)	1
Technical support	1
Not answered	15

---

14) **Are there existing professional development activities easily available to you now?**

Yes______No______

Results...

Overall:

Yes	=	25 (58%)
No	=	15 (35%)
N/A	=	3 (7%)

Type of User/Professional Development Activities

Frequent	Yes	22
Frequent	No	13
Frequent	N/A	2
Infrequent	Yes	0
Infrequent	No	1
Infrequent	N/A	0
Moderate	Yes	3
Moderate	No	1
Moderate	N/A	1

If yes, please list some of them:

Courses/workshops/seminars	14
Funds for professional development available	3
Conferences	2
Third party courses/private/vendor	2
Access to technical support	1
Not answered	4

14a) **Are there any barriers preventing your participation in these activities?** **Yes_____No______**

Results...

Overall:

Yes	=	29 (67%)
No	=	9 (21%)
N/A	=	5(12%)

Type of User/Barriers

Frequent	Yes	25
Frequent	No	8
Frequent	N/A	4

Infrequent	Yes	1
Infrequent	No	0
Infrequent	N/A	0
Moderate	Yes	3
Moderate	No	1
Moderate	N/A	1

If Yes, please explain:

Time	15
Funds/budget constraints	10
Availability/schedule conflict	8
Workload	4
Distance	3
Internal commitment	2
Lack of relevancy/applicability	1
No activities	1

15) Please check any of the following professional activities you would be interested in taking:

Results...

Computer graphics	22
Databases	21
Desktop publishing	20
Using computers to communicate with others	20
Word processing	19
Spreadsheets	17
Hardware	14
Distance education technologies	13
Multi-media	11
Technology for libraries/research	5
Introduction to computers	3

Other (Please specify):
Hard disk management
Programming
Plato
Modem applications
OpTel Telewriter 3

******

Thank you for taking the time to complete this survey. If you have any additional comments please use the following space and attach extra paper if necessary.

No comments.

Appendix E - Student Survey/Results

APPENDIX E - STUDENT SURVEY/RESULTS

Part A:

1) Which college or institute do you attend?

Results...

152/228 surveys were completed = 66% return rate. The breakdown from each institution is as follows:

Institution	Sent	Completed
BCIT	12	11
Camosun	12	10
Capilano**	12	0
Cariboo	12	8
CNC	12	9
Douglas	12	10
EKCC	12	12
ECCAD	12	3
FVC	12	10
JIBC	12	9
Kwantlen	12	11
Malaspina	12	6
NIC	12	10
NLC	12	11
NWCC	12	9
Okanagan	12	11
PMTI	12	5
Selkirk	12	3
VCC	12	4
Total:	**228**	**152(66%)**

* OLA declined to participate in the surveys as they felt their response would skew the survey results due to their tutorial and delivery system. Please see Appendix F for more information on the issues at OLA.

** Capilano College students were not in session when the surveys were initially distributed and time did not permit re-distribution.

2) Are you a full-time or part-time student?

_____**Full-time**
_____**Part-time**

Results...

Full-time = 125
Part-time = 25
Not Answered = 2

3) What program/department are you in?

Results...

Responses from over 55 different programs were collected.

4) Are you male or female? Male____Female____

Results...

Female	=	75
Male	=	77

Part B:

1) Do you use computers in the classroom? Yes____ No_____

Results...

Yes	=	100 (66%)
No	=	52 (34%)

1a) If YES, what problems do you encounter with computers?

Results...

There aren't enough computers	51
Hardware is out-of-date	43
Not enough access to computers for homework	38
Not enough training on computers	32
Hardware is breaking down	26

Other (please explain):

Software outdated	2
Time	2
Viruses	2
Software limited	1
Software updates	1
Formatting	1
Communication	1
Printer	1
Access	1

1b) If you encounter problems, what would you recommend to solve those problems?

Results...

Increase access and availability of computer labs	20
Buy new equipment	18
Buy more equipment	15
More individualized training (with instructor or tutor)	11
More training	7
Update software	5
Better maintenance	4
Get help from manuals or software	4
More money	4
Buy more printers	3
Get help from other students	3
Have a variety of computers at the school	2
More help during lab time	2
Get help from the "Help Desk"	2
More classroom instruction	2
Better introductory courses	1
Course on hardware and software	1
Need more time and practice	1
Need a computer graphics course for our program	1
Better politics	1
Offer more courses	1
Access to university and college programs via E-mail	1
Annual assessment of hardware needs	1
Bulk purchases	1
Donations from industry	1
Reprogram on-line tutorials	1

2) Did you use computers before coming to college? Yes__No__

Results...

Yes = 98 (64%)
No = 54 (36%)

3) Do you use computers outside of the classroom? Yes__No__

Results...

Yes	=	119 (78%)
No	=	32 (21%)
N/A	=	1 (1%)

3a) If YES, where? (At home, At the college, Other?)

Results...

Home	=	62
College	=	51
Other	=	34
N/A	=	30

3b) What do you use computers for outside of the classroom?

Results...

Word processing	124
Spreadsheets	52
Programming	40
Graphics/art	38
Database	31
Course specific software	28
Desktop Publishing	7
Other (please specify):	
Games/Entertainment	10
E-mail	5
PRS/PCF	2
Accounting	2
SquirelPos	1
Bulletin Boards	1
Library	1
Statistics	1
Homework	1
Mini Compt	1
Data Entry	1

3d) Do you have any problems with using computers outside of the classroom, and if so, what are those problems?

Results...

Need more training	30
Need better access to labs and equipment	13
Can't afford hardware and software for courses	5
Need better equipment	5
Need more technical support	3
Need more technical support	3
Different programs/systems	2
Programming	2
Incompatible storage media	1
Software is hard to find	1
My home computer can't handle the new powerful programs	1
Making full use of what the computer can do	1
Operational problems	1
Viruses	1
Configuration problems	1
E-mail	1

4) What other technologies for learning do you use at college? (such as video, laser disk, CD-ROM, electronic mail, video or electronic conferences, electronic mail, etc.)

Results...

Video	42
E-mail	17
Video cameras	3
Computerized library catalogue	3
Dictaphones	3
Typewriter	2
LCD projector screen	1
Photocopier	1
Audio Visual Equipment	1
Photographic equipment	1
Television	1
Video simulators	1
Audiocassettes	1
Scanner	1
Laser printer	1
None	32
N/A	41

4a) What problems do you encounter with these technologies?

Results...

Equipment out of date, inadequate or unreliable	13
Not enough access to equipment	6
Videos out of date or poor quality	6
Lack of training on use	6
Not enough equipment	2
Lack of variety of materials	1
Cost to program	1
No problems	27
Not answered	92

5) Do you feel that students are being exposed to the technologies that they will need in the future? Yes__No__

Results...

Yes = 85 (56%)
No = 53 (35%)
N/A = 14 (9%)

5a) If not, why not?

Results...

Not enough equipment/resources	20
Out of date equipment and/or software	14
Technology is advancing quickly, it is hard to stay up-to-date	7
Need more training	5
Not enough use of technology in specific program areas	4
Lag between industry and education	3
Not enough use of technology in all program areas	3
Lack of instruction	2
Need more contact with industry	2
Don't know	2
Out of date attitudes about technology	1
Public schools should have more computers & available classes	1
Up to the student to keep up-to-date	1
Not Answered	89

6) What issues do you see that relate to educational technologies?

Results...

Funding and resources to integrate educational technology	13
Technology should be relevant and current	11
Upgrading of courses to match technological advances	10
Need for more training	10
Need to keep up with industry and business	6
Rapid advances in technology and an effort to keep up	5
Increased use of technology in secondary schools	2
Increased student enrollment	1
Politics	1
Lack of instructor's knowledge on advanced technology	1
Need software that can be used for studying	1
Too much dependence on IBM's	1
Canada is falling behind in technical capabilities	1
Not enough technologists	1
Increased student enrollment	1
Lack of instructor's knowledge on advanced technology	1
Spell and grammar checks are a determent to students' writing skills	1
Everything is connected to technology even working in a store	1
People are losing their jobs to computers	1
Writing papers, keeping information	1
It is important to make high schools students aware of their options early in terms of technological choices	1
Co-op program has become a large part of the technologies in recent years and it is not working - more of an employer benefit	1
Canada is falling behind in technical applications	1
None	2
Not answered	86

7) Do you think you will be comfortable using computers by the time you graduate? Yes____No____

Results...

Yes	=	112 (74%)
No	=	34 (22%)
N/A	=	6 (4%)

Thank you for taking the time to complete this survey. If you have any additional comments please use the following space and attach extra paper if necessary.

Results...

(Some comments have been paraphrased, others are in direct response to question 7)

BCIT	My program made me confident to use spreadsheets and databases without having any personal computer background.
BCIT	Petroleum Dept. is in dire need of computers, 2 with hard drives & printers would be adequate.
BCIT	Upgrading courses for those with little/no experience;Co-op opportunities; student projects.
BCIT	In my course there is not time to teach the use of the technologies; students should be before entry.
Camosun	We should use computers more in class to meet our future needs outside of school.
Camosun	Non-computing part of program gets pushed aside to make enough time to get labs done for computer side.
Camosun	Time constraints, lack of proper equipment, lack of funds, poor teaching has dampened my enthusiasm.
Camosun	In electronic technology we are exposed but lack an understanding of hardware and software interaction.
Cariboo	Involvement is strictly mechanical.
Cariboo	Survey more applicable to Academics
Cariboo	Computers are of very little use to us in this trade except for plans.
CNC	Use technology to compete, increase exposure, we need up-to-date equipment;
CNC	I think that given a solid period to time, 2-3 days, is all it would take to reinforce what we need.
CNC	Though partly due to co-op employment.
CNC	In order for the level of technology at CNC to improve, there must be a greater commitment of funds.
EKCC	Computers are continuously up-dating.
EKCC	I've been a labourer for 15 years,and have not idea about the uses of technology. that's why I'm at school.
ECCAD	But I'll have to learn how to use one first.
FVC	But not through just in-school use
FVC	But so-so, I think that the training required in the program is too broad and probably insufficient.
FVC	Already am.
FVC	I am please that the college lets the lab be used by all students
JIBC	The use of computers can be intimidating to people who have been out of school for many years.
JIBC	Computers are necessary as a time saving device & more training is needed in work and school.
MALA	Not comfortable with use of computers in field work.
MALA	I think the 3rd/4th yr programs offered at the college are good, but the vocational programs suffer.
MALA	Get volunteers in the labs, create a spot for them and child-minding services.
MALA	Students without computers at home have access problems to the computer facilities.
NIC	A variety of teaching techniques should be available.

NIC	As an Office Admin., student I am finding a lot of courses outdated with no training on FAX & wordprocessing.
NIC	Good instruction here but it would be nice to have access between colleges.
NLC	It would be helpful to have varieties of computers not necessarily the other technologies.
NLC	All students (U/C/I) should be encouraged to use computers for their assignments.
OKAN	I don't know - not enough
OKAN	We need more.
OKAN	The co-op program needs an overhaul.
OKAN	I learnt about computers outside of school, on the job training. I need computer graphics course.
PMTI	In this program computers are not used.

Appendix F - Issues at the Open Learning Agency

APPENDIX F - ISSUES AT THE OPEN LEARNING AGENCY

Issues in the use of technology at the Open Learning Agency.

Introduction

The Open Learning Agency was unable to participate in the Issues for Implementation Surveys because the questionnaires were not appropriate for the context of Open Learning Agency staff and students. The Open Learning Agency has no on-campus faculty or students, although it does make heavy use of technology for course production and delivery. Since the surveys were designed to collect information and issues from the more conventional classroom-based student and instructor, OLA participation in the surveys was not appropriate.

However, the Agency has recently identified issues within its organization that focus on the implementation and integration of educational technology, through an internal review of instructional media for Open Learning Agency courses (Bates, 1991).

The Agency provided SCOET with its report, and the author of the report, Dr. Tony Bates, Executive Director, Research and International Development, has highlighted the following OLA issues for SCOET.

Lack of use and integration

The review was undertaken because the Agency's management was concerned that not enough courses were fully exploiting the range of media now available to them, or were not fully integrating them into course design.

The review found greater use of combined media than anticipated, especially regarding print and audio-cassettes used in combination. However, there was little use of computers in course delivery. Also, when the review was undertaken, there was little use of broadcast television in Open University and Open College courses, although this has increased since the review was implemented. Video-cassettes were also used in Open University and Open College courses. The review recommended even more use of audio- and video-cassettes on future courses. It was noted that video-cassettes provided students with greater flexibility and control than broadcast television, which fits less easily into continuous registration system. It did however recommend greater use of broadcast television for its own courses in selected areas.

Telecourse programming

A major concern for the Agency is the decline in curriculum-based telecourse offerings from other institutions. As licences have expired, other institutions have in general not replaced telecourses, mainly because of lack of funds to acquire or develop new programs. Thus the Agency has transmission capacity, but the institutions do not have the funds to generate the programming to fill it.

Audio-Conferencing

While the Agency offered over 730 hours of audio-conferencing in 1989/90, the main users were other institutions. The review recommended greater use for 'core', real-time teaching by audio-conferencing for the the relatively large number of Agency courses with low student numbers (<20 per semester). Audio-conferencing use by the Agency for its own teaching has increased significantly since the review.

Audio-graphics were also being used at the time of the review, mainly by the Small College Consortium, but also by Native Indian bands.

Computer-aided instruction/Computer networking

OLA was not at the time using computers for teaching, either in the form of CBL or for computer networking. Since then one course is using computer networking, and computer-based instruction is available for some projects in the Open College. The review strongly recommended increased activity in this area, including the appointment of an instructional computing specialist and the development of a student computing policy.

Print

Print is still the 'core' medium for most courses in the Open College and the Open University, partly because it is still the most cost-effective medium for courses with moderate to large numbers of students each year. Print itself has been heavily affected by technological developments. As substantial investment in electronic publishing has been made, which has enabled the Agency to improve considerably its cost-effectiveness regarding print design and production. Nevertheless, it is expected that print will decline, not in absolute terms, but as a proportion of the teaching technologies used by the Agency, as 'on-line' teaching using audio- and computer-conferencing is increasingly used on courses with low student numbers, and as 'high-tech' (multi-media, video-conferencing, ISDN) is used more for specialist purposes, such as workplace-based training.

Learning Centres

The Agency had at the time of the study no learning centres of its own; it would like to increase considerably the number of centres in the Province available for open learning students. Learning centres would allow for a wider range of more advanced technologies to be used than for home-based delivery. However, unless there is a major increase in funding from the Ministry for learning centres, the main expansion in learning centred-based teaching is likely to be in the corporate sector, where a range of technologies are already being used.

Factors influencing use of technology

The review highlighted several significant factors influencing use of technology by the Agency for teaching purposes:

- *course size*: audio-conferencing and computer conferencing were more appropriate for courses with low student numbers; print and television were more appropriate for courses with large student numbers;
- *resources*: the Agency is having great difficulty 'feeding the machine', irrespective of the technology: funds for developing new courses or replacing old courses are inadequate, which means that it is very difficult to develop new methods, especially since it take time to train/recruit new staff to use new technologies.
- *organization*: new technologies need re-allocation of resources, and re-organization of departments; the Agency is currently undertaking an organizational review.

Conflict in mandate

The mandate to provide open access to students sometimes conflicts with mandate to be a leader in new technology applications: home-based students have access to limited technologies; some of the more advanced technologies (e.g. ISDN) are not available outside inner city areas, or are expensive to use.

Appendix G - The Interviews

Individuals interviewed:

Tony Bates (Open Learning Agency)
Cheryl Dahl (Fraser Valley College)
Milt McLarin (Simon Fraser University)
Betty Mitchell (Open Learning Agency)
Marnie Mitchell (Task Force on Employment & Training)
Dan Smith (Motion Works, Inc.)
Ken Stratford (Business Council of Victoria)
Wolfgang Strigel (Strategic Planning for Applied Research and Knowledge)
Gary Weger (Applied Science Technologies and Technicians of B.C.)

Transcripts of the interviews are available upon request. Contact the SCOET office for more information.

Appendix H - The 1991 Educational Inventory

APPENDIX H - THE 1991 EDUCATIONAL INVENTORY - ISSUES & RECOMMENDATIONS : AN ANALYSIS.

Major issues identified from *The 1991 Educational Technology Inventory* are:

- a general lack of equipment for instructional computing and particularly for resources close to the leading edge of the new technologies (such as multi-media presentation tools);
- the lack of a cohesive system-wide equipment replacement policy;
- the general obsolescence of both instructional and administrative software;
- our inability to support technological initiatives, development and training at most colleges in the system.

These issues relate directly to broader questions about funding, but particularly about the priority of educational technology within the general instructional mandate of the colleges and institutes. Flowing from an examination of these issues, SCOET recommends the following:

1. We believe that all faculty members should have an opportunity to use microcomputers and computer networking and that all can benefit from this opportunity. Hardware and connections should be made available to support these activities.
2. Most classrooms should have electronic presentation equipment or it should be readily available for instruction. This kind of equipment is simply the modern version of the overhead projector.
3. There should be enough lab space to accommodate students' needs.
4. Each college and institute should have some of the most modern educational technology equipment and it should be available generally and not simply to a particular program.
5. Each college and institute should have a formal computing plan and formal acquisition policies which are known to their constituents.
6. College plans should include a provision for the replacement of computing hardware and software as well as most educational technology equipment.
7. Each college and institute should have site licenses (or the equivalent) for word processing, spread-sheet, and database software. Funds for software for instructional use should be provided annually.
8. An instructional computing/technology position should be established at each college and institute. The mandate would be to promote and foster instructional computing/technology and should include the provision of professional development or training for faculty. The person in this position should report to the person responsible for the generation of the computing plan. In addition, faculty should have professional development opportunities to benefit from the existence of such a position.

Appendix I - Glossary of Terms

APPENDIX I - GLOSSARY OF TERMS

ARCnet	Attached Resource Computer Network. Basic LAN technology.
asynchronous	A style of sending data across a communications line where each character can be sent at any time. The standard style for sending data between two modems.
audio conferencing	Conferencing involving more than two parties over voice connections.
audio graphics	Audio graphics is a technology that combines audio, text and graphics/video capabilities. Most audio graphic systems are computer based and use telephone lines to connect for real time two way and multi-point communication.
B.C. Advanced Systems Institute	A private, non-profit society who's mission is the development and application of "Advanced Systems" disciplines through collaborative efforts with B.C. universities and industry for econimic benefit to the province and country.
BCCEC	British Columbia Computer Educators Committee
backbone	A high speed network that interconnects other networks.
bandwidth	The maximum amount of data which can pass along a data line at one time usually represented in bits per second (bps), kilobits per second (kbps) or megabits per second (Mbps). (syn. *capacity*)
BAS	Budgetary Accounting System. A VAX/VMS based finance package from SRB International.
BCnet	A physical data network connecting B.C. educational, research and development organizations and institutions to each other and to international data networks such as CA*net in Canada and NFSNET in the U.S.
bits	Binary digits. The smallest components of computer information. A single bit can be seen as a switch, either "on" or "off", or as having a value of either zero or one. A bit is also a measurement of memory capacity.
Bitnet	A store and forward network used for e-mail and file transfer especially between IBM mainframe machines.
bridge	A device that connects two or more similar networks and forwards packets between them.
Bucat	Brandon University Catalogue System. A library automation system providing on-line catalogues, circulation and acquisition services.
bulletin board system	(BBS) A self-contained mini-on-line service, usually free, usually consisting of a personal computer and special software and hardware which receives calls from other people's computers and provides any number of electronic services.
CAI/CAL	Computer Assisted Instruction/Learning - Instruction or learning where the role of computers is limited to the enhancement of either process.

CA*net	Canada's backbone TCP/IP network connecting regional networks in all 10 provinces.
CD-I	Compact Disc - Interactive. Accessed by a CD-I player connected to a T.V. monitor.
CD-ROM	Compact Disc - Read Only Memory. Accessed through a computer.
CDNnet	A Canadian network providing OSI services, electronic mail based on the X.400 protocol, interconnection to the Canadian commercial network Envoy 100, and an electronic mail gateway to the Internet.
CBE	Computer Based Education. Varying degrees of computer use which either focus on the instructional aspect or the learning aspect of computer applications. Computer Based Education encompasses CAI, CAL, CBI and CBL.
CBI/CBL	Computer Based Instruction/Learning - Instruction or learning where the role of computers encompass more complex functions such as understanding concepts and their application to problem solving.
CCCC	Computing & Communication Coordinators Committee.
CCEO	Council of Chief Executive Officers-- B.C. College and Institute System.
CCITT	Consultative Committee for International Telephony and Telegraphy. An organization responsible for establishing telecommunications and data communications standards.
CITEC	Colleges & Institutes Technology in Education Committee.
CML	Computer Managed Learning. The use of computers to manage the entire learning process.
computer conferencing	A computer mediated communications tool which enables ongoing interactive dialogue. Conversations are stored and held for each participant to read and/or respond at their own leisure.
CoSy	(**Co**nferencing **Sy**stem) Computer conferencing system software originally developed by the University of Guelph in 1987.
Courseware	Software with educational content related to a specific subject or course.
Datapac	Telecom Canada's packet-switched network.
database	Any organized collection of data, gathered and stored under some database management system.
DEC	Digital Equipment Corporation.
DECnet	Software which allows B.C. colleges with VAX computers to communicate over Datapac with other institutions with the same setup.
delivery	The presentation of material. Generally referred to in the context of media used to present instructional material, such as audio, video, or the application of a specific type of computer software.

DG	Data General. A computer hardware manufacturer.
dial-up	The act or process of connecting one computer to another using modems and existing communication lines.
distributed file system	A file system in which different pieces of different files are contained in multiple file servers in multiple locations throughout a given network.
DTP	Desk top publishing.
EAN	A message handling system developed by the Distributed Systems Research Group in the Department of Computer Science at UBC in the mid 1980's for the Unix and VAX/VMS operating systems.
educational technology	Communications, media, computer or other electronic technologies as the *subject* of educational programs, or, as *applied* in the development, delivery and administration of educational programs, or as *used* by students to facilitate or enhance their education.
ELN	Electronic Library Network.
E-mail	Electronic mail.
ENVOY	A Canadian Commercial Electronic Network providing various information and services.
Ethernet	A popular 10Mbps network architecture designed by Xerox that uses passive cabling to connect workstations through the use of network interface cards.
external mail	Electronic mail with a destination outside the institution in which it is originated.
file server	A computer dedicated to storing and delivering data.
file sharing	A configuration of computers whereby more than one machine has access to the same files or software.
gateway	A network device used to connect two or more dissimilar networks. Gateways perform protocol conversions (e.g. between a TCP/IP based network and a Novell network).
HP	Hewlett-Packard, a popular hardware manufacturer.
internal mail	Electronic mail with a destination inside the institution in which it is originated.
InterNet	A conglomeration of more than 2,000 national and regional data networks which interconnect worldwide.
LAN	Local Area Network. A local collection of computers, printers, modems and other devices that are interconnected through one of the standard network architectures such as Ethernet, Token-Ring.
leased line	A data line which maintains a connection between two points and is paid for by its user or user organization.
LCD	Liquid Crystal Display unit used for overhead projection.
Libcat	Library Cataloguing system. A library automation system.
MAETT	Ministry of Advanced Education, Training and Technology.

megabyte	1,000,000 bytes.
minicomputer	A computer greater in price, capacity and power than a micro-computer but less than a mainframe.
MIS	Management Information System - A computer based system of data organization and management which provides information to managers to assist them in the decision-making process.
modem	Modulator/de-modulator. A device used to translate digital information from one machine into analog form, transmit it over analog data lines and then translate it back to digital form for the recipient machine.
MTS	Michigan Terminal System. An operating system for IBM mainframes.
multi-media	The combination of more than one element of educational technology. Typically this refers to the combination of text, graphics and audio produced with various devices but monitored and/or controlled at a single control centre, such as a computer.
NetNorth	The Canadian segment of the BITNET/EARN network. Now carrying almost all of its traffic over BCnet.
Novell	A company which produces popular micro-computer networking software.
NSFNET	NSFNET is the U.S. National Science Foundation network. It is comprised of a country-wide backbone network of approximately twenty-five mid-level wide-are networks. The backbone is managed by Merit, Inc., a consortium of eight Michigan universities in partnership with the State of Michigan, IBM, and MCI.
NTSC-TV	North American standard televison signal.
OSI	Open Systems Interconnect. The International Standards Organization's (ISO) effort at establishing a global standard for communications and networking. OSI is based on the OSI seven layer communications model, often referred to as the OSI Reference Model (OSIRM).
packet switched network	A physical network which relies on packet switching (as opposed to circuit switching) as its means of transmitting data
P.D.	Professional Development.
PROFS	Professional Office System - IBM's electronic mail, calendar and document database.
PIMA	Pacific Instructional Media Association.
platform	The specific combination and configuration of hardware and software used in the delivery of a computer application. Can be as general as a description of the operating system or as specific as a listing of the devices brand names and model numbers involved.
presentation software	Software designed to facilitate the computer presentation of text and graphics. i.e. Harvard Graphics (when audio is incorporated it is usually referred to as multimedia).

proprietary software/hardware	Software or hardware designed by a manufacturer to work only with other software/hardware they manufacture.
protocol	The predefined hardware, software or methodology and related set of parameters which allow two different devices to communicate.
report generation software	Software designed to organize data and produce reports in a specified format from raw data.
router	A communications device designed to make decisions about which of several paths a packet of information will take.
scanner	A device which digitizes graphics and text for computer storage.
SMTP	Simple Mail Transfer Protocol. One of the main protocols of the TCP/IP suite that is used for transferring electronic mail messages from one computer to another.
SRS	Student Record System. (VAX/VMS based)
standardized hardware/software	Local agreement to purchase and use the same hardware and/or software in order to avoid problems of incompatibility.
S-VHS	A video tape recording format.
Sun Microsystems	A popular vendor of Unix based computing systems.
T1	A high-speed telecommunications line operating at 1.544 Mbps.
T3	A high-speed telecommunications line operating at 45 Mbps.
TCP/IP	Transmission Control Protocol/Internet Protocol. An important and major protocol suite, of which TCP and IP are the two key protocols, allowing large internetworks of communicating machines to be built.
Telecom Canada	An association of 10 Canadian telecommunications companies (including BCTel). It coordinates operations of the national telecommunications network, marketing products and services nationwide and coordinating the division of revenues from these services.
telecourse	Telecourses can be credit or non-credit and are usually accompanied by print materials and tutorial support.
testbanking	An abbreviated form of test item banking whereby test items are stored in a computer to be used in the design of tests, quizzes and exams. Testbanking refers specifically to the storage of tests.
Token Ring	A 4 Mbps and 16 Mbps token-passing network architecture designed by IBM.
UNIX	An operating system first developed by Bell Laboratories in the 1970's which has become the de facto standard for open computing systems.
VAX	A series of DEC computers.
VGA	Video Graphics Array.
VHS	A video tape recording format.
video conferencing	Conferencing which incorporates the use of two-way audio and video transmission to connect participants at various locations.

Virus checkers	Software used to detect the presence of a virus in a computer or network.
VM	An operating system for the IBM mainframe.
VMS	The operating system developed by DEC for their VAX computers.
WAN	A collection of disparate, widely located and geographically isolated networks, connected by private or public communications lines, or some combination of both.
X.25	A packet switching-based wide area networking technology. X.25 networks can be private, but the majority of X.25 usage is through services provided by public carriers.
X.400, X.500	CCITT-based (and OSI adopted) standards. X.400 covers electronic mail and store-and-forward communications. X.500 covers address definition and is designed to be used by X.400-compliant systems.